# The EXCAVATING ENGINEER

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## IN THIS ISSUE:

Quarry Practice Developed by Forty-Six Years of Operation.

A New Stripping Method—Worked Out by an Old Timer.

101,000 Pounds of Explosives Lift Approximately 150,000 Cubic Yards of Rock.

Front Cover Illustration: Stripping Operations of J. Robert Bazley at Mill Creek Coal Company, Morea, Pennsylvania.

UMI

# This contractor's "sitting pretty" for his race against time

One of *10* BUCYRUS-ERIES that Mr. Miller used on this *450,000-yard job.*

Harold Miller of Detroit at the Yellow Cab job, Pontiac — using the good old-style taxi that handles best over rough ground, with hay engine and four flat steel tires.

## Trusty steed bears Harold Miller of Detroit; reliable BUCYRUS-ERIES carry through his big jobs

Only 5 months to change a hay field into an automobile plant—and more than 450,000 yards of excavation for foundations and railroad spurs, before construction could start.

No wonder Harold Miller, the hustling Detroit contractor who had charge of all the excavation for the new Yellow Cab plant at Pontiac, Michigan, needed the taxi shown here to keep tabs on this big job.

Mr. Miller, who handled the excavation for the general contractors, J. A. Utley Co. of Detroit, had to work fast to clean up this big excavation in 150 days in spite of heavy rains that often turned the whole job into a sea of mud. At one time or another, there were

### 10 BUCYRUS-ERIES on this rush job

eight B-2s and two 50-Bs. Mr. Miller has used BUCYRUS-ERIES for years—knows he can depend on them. On the big contracts where there's tough digging and lots of it, the big margin of extra strength of BUCYRUS-ERIES makes them more Reliable—they're able to work steady at the faster pace they set.

Read — at the right — what Mr. Miller writes about the splendid results BUCYRUS-ERIES gave him on this job. Then write us for performance records made on work similar to your own.

"A pleasure to have..... all BUCYRUS-ERIES..... high yardage; low maintenance."

In telling about the Yellow Cab job, Mr. Miller reports: "It has been a pleasure to have these BUCYRUS-ERIES handle the job, giving high daily yardage with low maintenance cost. The machines are very reliable, upkeep is practically nothing, and they are always ready to work.

"I have operated every type machine on the market, and if I were to purchase a dozen shovels, they would all be BUCYRUS-ERIES — the best all-round shovels ever built."

Thousands of other contractors have had the same experience with BUCYRUS-ERIES, the shovels and cranes that get the work done faster—and are built to stand their faster pace.

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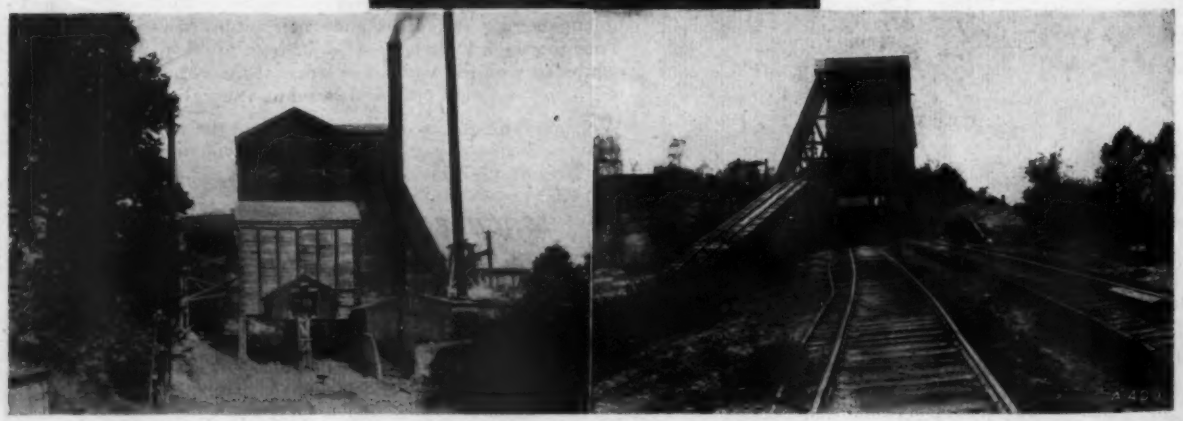
Quarry No. 1 Operates on Two Benches, the Present Output Coming from the Lower Floor Where You See the Bucyrus 50-B Electric. The 45-ton Railroad Shovel on the Upper Bench Is Ready for Emergency Demands.

Another View of No. 1 Quarry, Showing Both Plants in the Distance.

Below: 8D Plant and 8K Plants at No. 1 (Stolle) Quarry.

At Left: Plant at No. 2 (Falling Springs) Quarry.



The
EXCAVATING ENGINEER

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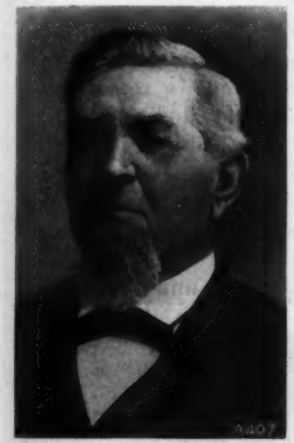
# Quarry Practice Developed by Forty-Six Years of Operation

## The Casper Stolle Quarry and Contracting Company Methods Deserve Careful Attention

By J. E. WEBER, *Secretary, The Casper Stolle Quarry & Contracting Company*



"EXPERIENCE is the best teacher" says an old axiom. Perhaps in no other industry is this more true than it is in the field of excavation. For this reason particular interest attaches to the operations of The Casper Stolle Quarry and Contracting Company of East St. Louis, Illinois. For forty-six years this organization has been producing crushed stone, and in that length of time has built thirteen plants. Some of these replaced plants destroyed by fire, some were the result of expansion required to meet increased demand; and some due to the necessity for more economical production.

At present they are operating three plants, two at Stolle, Illinois, on the Illinois Central Railroad and one at Falling Springs, Illinois, on the Terminal Railroad Association tracks.

### *How Quarries Were Operated in 1882*

It was way back in 1882 that Casper Stolle, who started in the quarry business in St. Louis, Missouri, in 1846, installed a No. 3 Allis-Chalmers crusher at Stolle, Illinois, on the old St. Louis and Cairo Short Line to produce crusher run ballast. At that time bucket elevators had not come into use; the crusher was elevated so that the crusher run material was loaded directly from the discharge spout of the crusher onto flat cars of about twenty (20) tons capacity that were equipped with low sideboards. These cars were unloaded on the track to be ballasted by ploughing the stone off. Later a short bucket elevator and a flat screen were installed to screen out the 7/8-inch and dust, the screened stone falling on the car. The fines were carried by a chute to the side of the railroad track, the accumulation of fines being moved by wheelbarrows to a waste dump as, at that time, there was no market for the fines. In 1896 bucket elevators and revolving screens were put in use, and storage bins were erected. This was the beginning of the separation of the different sizes of stone; the company now produces seven different sizes. The original No. 3 Allis-Chalmers crusher, by the way, is still in service at the Falling Springs plant.

The rock from the quarry in those pioneer days was drilled by hand, shot with black powder, broken with sledges, loaded by hand on wheelbarrows and dumped into the crusher.

Thirty-six years ago the business was incorporated as The Casper Stolle Quarry and Contracting Company, and F. W. Stolle, a son of the founder of the business, was made general manager, and has held that position continuously since the organization of the corporation. He is still actively engaged in the direction of the business of the company, Casper Stolle, the

founder of the business, having passed to the great beyond some twenty-six years ago.

In the early days of the organization no small part of their efforts were devoted to the contracting end of the game, but this branch of the business has long since been discontinued, and all efforts are being confined to quarry operations.

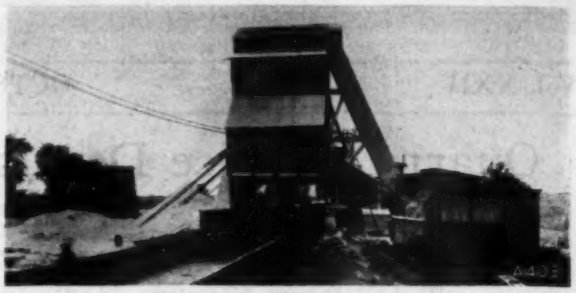
*Impressive Lesson in Use of Diversified Markets*

Perhaps one of the most impressive lessons, which may be learned from a study of the development and operations of this firm, is searching out and using diversified markets. As a result of research work carried on by the extension department of the University of Illinois, it was found that the farm lands in the territory served by this company were excessively acid, and badly needed some neutralizing element to bring productiveness back to normal. After a series of experiments conducted by the Illinois State University, (in which this company assisted by supplying the fine limestone), it was determined that finely-ground limestone was the ideal treatment for this soil condition. Time has demonstrated the correctness of this prognosis, as there has been spread on the farm lands of Illinois each year for the past two years between seven and eight hundred thousand tons of fine limestone furnished by the various stone producers of the state.

The ever-increasing demand for this particular product has made it necessary for this company to install an American and Williams Pulverizers to keep pace with the orders.

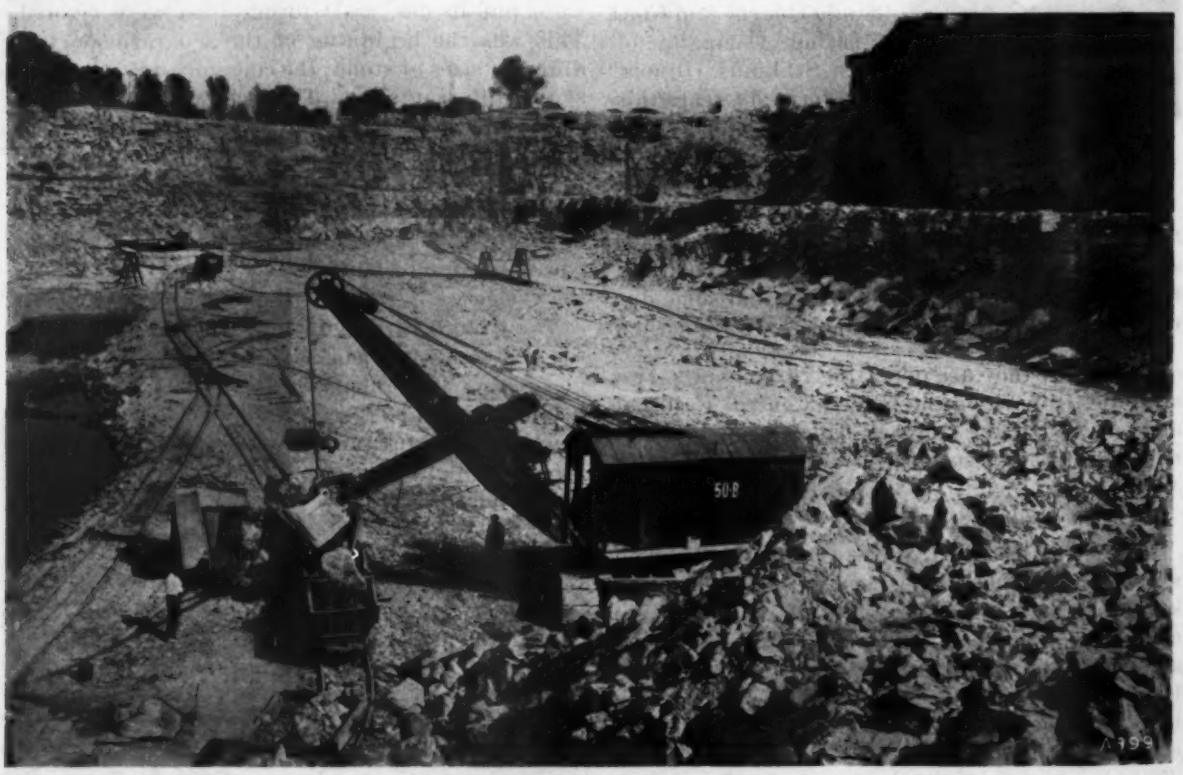
*Labor Turnover Reduced to a Minimum*

Another feature of the operations of The Casper Stolle Quarry and Contracting Company, which



Storage Bin, 8K Plant, at Stolle Quarry.

impresses the observer, is their method of handling the human equation of their organization. Every effort is made to encourage men to remain permanently with the company, and losses due to a large labor turnover have been reduced to a minimum. For single men an excellent modern stone building has been erected, equipped with steam heat, electric light and modern bathing facilities. This building is used as a dormitory, the kitchen, dining room and commissary is under the same




No. 1 Quarry Track-Layout, Loading, Drilling and Material Are All Well Shown Here.

roof, also the quarry office of the company — all was planned for the convenience and comfort of the men. Each individual has a separate bed and locker with lock and key in which to keep his belongings — in addition to these conveniences there is a recreation room where the men can spend their evenings playing games, reading, or any other diversion they may fancy. Men with families have not been overlooked in the general scheme, the company have ten detached houses — each with a plot of ground adjacent thereto for men with families. In addition to these houses, for those who prefer this type of domicile, there is a four-

**Loading at Quarry No. 1 with Bucyrus 50-B Electric Shovel.**

family flat with running water and electric lights on the property. There are good schools within a reasonable distance of Stolle to take care of the children. So much for the human angle of the organization.

*No. 1 Quarry Worked to Depth of 100 Feet*

The No. 1 Quarry at Stolle, Illinois, is a pit operation — the bluff at this point rises about forty feet above the level of the railroad tracks. This has been worked to a depth of one hundred feet on one level, which makes the quarry floor about sixty feet below the railroad track level at one side of the pit. The pit is oblong in shape — being approximately eighteen hundred feet long by an average width of four hundred feet.

There are two separate crushing units at this plant located about five hundred feet apart, which can be operated either together or separately. This gives great flexibility to the working of the quarry, as, in the event of a failure of either plant, the remaining one can take care of urgent needs until such time as repairs can be made. The plants are known as the No. 8 "D" and No. 8 "K." As the name indicates, the first has for a primary crusher an 8 "D" Allis-Chalmers — the material from this crusher being fed into a bucket elevator having seventy-foot centers, and is elevated to the screen loft where the stone is fed into two 18-foot x 60-inch Allis-Chalmers revolving screens, the finished sizes from the revolving screens drop directly into the different bins provided for each size; the oversizes are returned by gravity to a No. 5 "D" Allis-Chalmers for recrushing. The material from this crusher is fed onto a belt conveyor, which in turn carries it to the bucket elevator which serves the 8 "D," and again elevated to the screen loft for distribution to the proper bins.

The fines from 7/8-inch down are carried to a Hummer vibrating screen where the 3/8-inch and dust are taken out and chuted into their respective bins. This unit has a bin storage capacity of thirty carloads, and the equipment is driven from a main line shaft by a 250 h. p. General Electric motor. This plant has an auxiliary equipment of one American pulverizer and a Grundler hammer mill, the pulverizer is driven by a 100 h. p. General Electric, and the Grundler by a 50 h. p. Allis-Chalmers motor.

The stone is loaded in 3-yard, end dump, steel quarry cars, and is pulled up an incline by a cable attached to an Allis-Chalmers friction hoist and dumped directly into the primary crusher.

*Plant Operation at Second (8 "K") Plant*

The No. 8 "K" plant has an 8 "K" Allis-Chalmers for a primary crusher which discharges on a belt conveyor — the conveyor in turn dumping on a bar grizzly; the oversize from the grizzly flows directly into a 6 "D" Allis-Chalmers crusher, which feeds into a bucket elevator having sixty-five-foot centers, which takes care of the graded sizes from the grizzly — all being elevated to the screen loft where the separation is made by two

**No. 1 Storage with Agstone Storage Above.**

18-foot x 42-inch revolving screens. The properly graded sizes are then carried by chutes to the proper bins — the oversizes being returned by gravity to the 6 "D." The fines at this plant are separated by a Universal Vibrating screen. The 8 "K" plant has a storage bin capacity of twelve carloads. The 8 "K" is driven by a 100 h. p. General Electric — the 6 "D" by a 50 h. p. Westinghouse, and the screens and elevators by a 50 h. p.

**Storage Bin and Plant at Falling Springs Quarry.**

Westinghouse motor. The stone for this plant is also pulled up an incline by a cable attached to an electric hoist.

The railroad tracks at both plants run under the storage bins, and the stone is loaded directly into cars from two gates in the bottom of each bin.

In addition to the equipment already enumerated, this quarry has a well-equipped blacksmith and machine shop, housing a power hammer, drill press, grindstones, and tool-sharpening appliances — also an electrically-driven air compressor.

### *Quarry Operations Arranged for Delivery of Stone at Either Plant*

The primary drilling in the quarry is done with two Sanderson Cyclone No. 14 electrically-driven deep well drills, and the secondary drilling by Ingersoll-Rand jackhammers driven by compressed air.

The stone is loaded by a Bucyrus 50-B revolving caterpillar electric shovel, and a Type "B" Erie steam shovel; the 36-inch gauge quarry tracks are so arranged that the cars can be delivered to the foot of the incline of either crusher. They are handled by three Whitcomb 8-ton gasoline locomotives.

### *Falling Springs Quarry Opened to Save Switching Charges*

Quarry No. 2 is located at Falling Springs, Illinois, on St. Louis Terminal Railroad, which serves all the industries in St. Louis, East St. Louis and the Tri Cities, Venice, Madison and Granite City, Illinois — also has direct connection with all trunk lines running into St. Louis and East St. Louis.

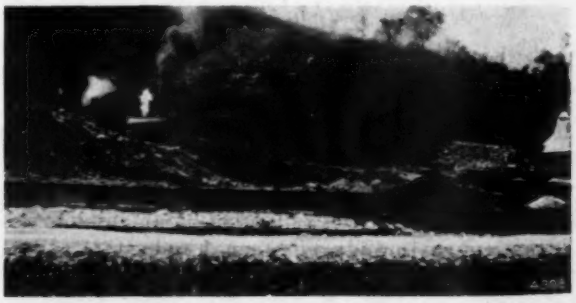
The plant at Falling Springs was built because of the advantage in switching rates in force from this point.

The Company owns about three hundred (300) acres of St. Louis limestone bluff adjacent to this plant. The bluff rises to a height of from one hundred to two hundred twenty-five feet along the face, and the overburden of clay has been removed along a considerable length of the face — this work was done a number of years ago by the Vandalia Railroad, who at the time owned the property and operated a quarry for a short time.

The Stolle Company acquired the property about three years ago, and, owing to the advantage in freight rates from Falling Springs, decided to put in a new plant there to take care of increasing business instead of increasing the capacity of No. 1 quarry at Stolle.

### *Plant Equipment at Falling Springs Includes 1882 Crusher*

The equipment installed is a 7½ Allis-Chalmers crusher as a primary breaker, the oversize after passing the sizing screens are fed into a No. 3 Allis-Chalmers crusher (the same one Casper Stolle started business with). The No. 3 Allis-Chalmers is augmented by a Williams hammer mill, which is operated when the demand for the fines and screenings is greater than for the larger sizes. This machine can be adjusted to produce either agricultural limestone or ⅞-inch screenings.



**Bucyrus 18-B Shovel in No. 2 (Falling Springs) Quarry.**

The general arrangement of this plant is similar to the plants at No. 1 Quarry, except that the separation is done by two Niagara vibrating screens instead of the revolving type of screen.

The drilling and blasting is along the same lines as that at the No. 1 plant. The crushers at No. 2 are at the quarry floor level, and the stone is loaded into 4-yard Western side dump cars by a Bucyrus 18-B revolving shovel and hauled to the

crusher platform by a 3-ton Whitcomb gasoline locomotive. The same plan of loading from the storage bin and arrangement of railroad tracks is used here as previously described for the No. 1 plant.

The various units at No. 2 plant are driven by the following named motors: One 200 h. p., one

Store, Office and Boarding House at No. 1 Quarry with 4-Family Flat at Right.

75 h. p., one 40 h. p., one 25 h. p., one 15 h. p., one 10 h. p., and one 5 h. p., all Fairbanks-Morse motors, and one 7½ h. p. General Electric.

This company operates the year around — during the slack months the product is placed in storage.

### *Ingenious Storage Methods Used at Falling Springs*

A storage trestle nine hundred feet long and thirty feet high is the method used in placing stone in storage; a four-yard 36-inch gauge steel car with doors that dump on both sides is loaded from the crusher bins and pulled up onto the trestle by a cable attached to an 8 x 12 Flory double drum hoist engine operated by steam. By placing a trip block on the track, the car can be dumped at any point on the trestle desired — it requires only two men to handle this equipment, one runs the hoist, which also pulls the empty car back under the bin, and a man to close the car doors and load the stone from the bins. There is a ground storage capacity of 60,000 tons. This material is reclaimed in the busy season by an Erie Type "B" revolving steam shovel and a Barber-Greene loader.

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# A New Stripping Method—Worked Out by an Old Timer

## How Bill Won the Reputation of Being One of the Best Operators in the Coal Fields

WE were sitting around the glowing cannon-ball stove in the lobby of a little hotel in the coal fields and quite naturally the talk fell into a discussion of strippers, stripping methods and operation. The conversation paused now and then as one of us filled his pipe or read aloud some interesting bit from a newspaper, and it was during one of these pauses that Bill joined the group. Bill was a tall, rangey fellow from the mid-west, and he had the reputation of being one of the best runners in the stripping business. (Bill is his real name, but "Bill" alone he will have to remain — at his own request).

It wasn't so very long before one of the men asked point-blank:

"Say, Bill, how the mischief do you manage to move so much dirt with that old bone-shaker of yours?"

Bill apparently was annoyed by the way the question was put, but his annoyance slipped away before the compliment of eager attention.

"Well, you see, it's like this," he replied, after a moment, and went on to outline a method of operation so impressive, considering Bill's well-known reputation, that we not only visited his job next morning but spent several days studying the way he handled the big mucker.

Knowing that all runners are on the trail of moving more dirt and moving it with less effort, we have presented this new method as fully and as practically as we know how — with the hope that other runners can win some measure of the reputation enjoyed by old Bill.

To get the drift of Bill's method it is almost necessary to go down in the pit and watch it work. In the description that follows we've gone into some stuff that sounds like saying a lot of things we all know, but it's going to be necessary to have these things very clearly in mind to understand what Bill was getting at.

### *Using the Stripper's Great Power to Best Advantage*

Bill's little system was based on the obviously simple fact that to move the biggest yardage the easiest way every shovel runner must use the great power under his control to the best advantage. Bill stumbled on the way to do this in a rather curious way.

He was working at the time in a pit where the overburden consisted of some earth, some soft shale, very hard blue slate and a six-foot ledge of limestone. He had no trouble in moving the stuff above the slate, the only thing he noticed about it was that it took a little longer to fill the dipper than it should have considering the soft material.

The blue slate gave him some trouble though he usually came out with a pretty good dipperful; but the limestone gave him a pain.

The company used every effort to shoot the overburden in the best possible manner, and they made a good job of it, but still it was tough going.

That winter saw a good demand and price for the coal at this particular pit. The loader was bailing it out every day, and before long was right behind the mucker. One day the shots were not so good and Bill was up against it. He couldn't get to first base with the limestone. Then an idea struck him. He dug off the upper strata which was soft. When this was done he moved up close to the blue slate and found he could not only pull it up, but could get a nice bunch of it.

"Well," he thought, "if this works on the blue slate it may work on the limestone."

So he took out another short cut of the soft material (about an eight-foot cut) — dug it down to the blue — then moved the shovel up eight feet and took out the blue faster and easier than when he tried to get it altogether. Here he found the shovel was a little too close to drop in for the bottom ledge of limestone so he backed up just far enough to drop in without hitting the spill with the dipper; pulled up the limestone and dumped it ahead of him and right off the quarter. This answered two purposes. It gave him a quick, short swing with little racking in or out, and formed a buck wall of rock and hard material. This buck wall of rock made the spoil pile safer from slides, as it furnished a good solid foundation for the softer material which he placed on top.

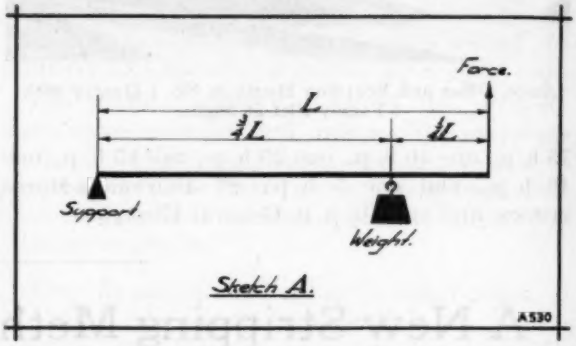
### *And . . . . It Was a Lot Easier for Bill*

This way of handling the shovel helped Bill out of the hole and he adopted the method as a regular way to operate. The funny thing about it was that he seemed to have more power — swore he had a whole lot more bail pull — and he also found that there was much less racking in and out of the sticks, which saved him time and brought about less wear and tear on the rack and pinions. There was less hoisting and lowering, which, of course, saved power, time and cable. And — what really made him stick to it — it was a lot easier for him.

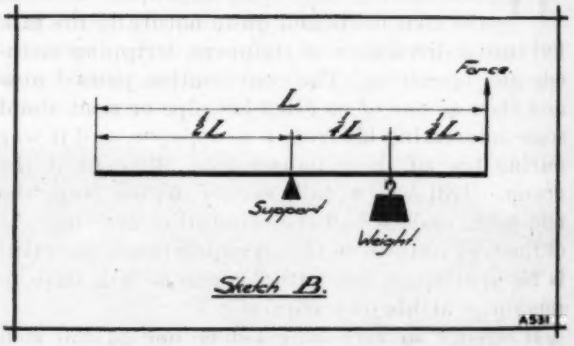
This question of more power was a queer one, and after we got into it a little we found that it figured out this way.

### *Where the Extra Digging Force Comes From*

Bail pull and digging force are really two different things. The work to be done by the bail pull is to lift the dead weight of the dipper, dipper sticks and dirt, and also to break up the bank and fill the dipper. That part of the bail pull used to break up the bank and fill the dipper is termed DIGGING FORCE. The amount of digging force available can be varied, depending upon the manner of handling the dead weights of the dipper, dipper sticks and dirt. These dead weights when working on long dipper sticks have more downward pull than they would have if the sticks were racked in as is the case when working the machine close to the face of the bank. The result is comparable to the effect obtained when shifting a counterweight in or out on an operating lever. The same weight moved to the end of the lever has greater counterbalance effect than when located close to the hub of the lever. This is further illustrated in sketches "A" and "B" shown below. In

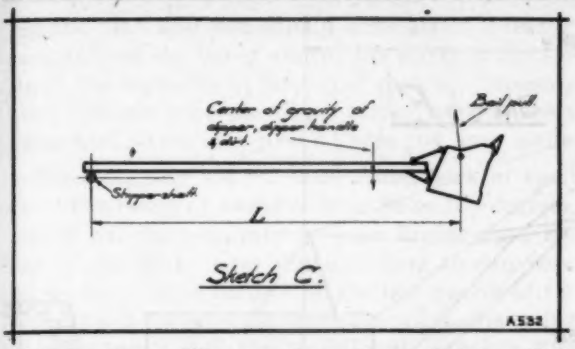



sketch "A" we show a lever supported at one end and with a weight at a point three-quarters of the lever's length from the support. The lifting force is applied at the opposite end from the supported end, or one-fourth the lever length from the weight.

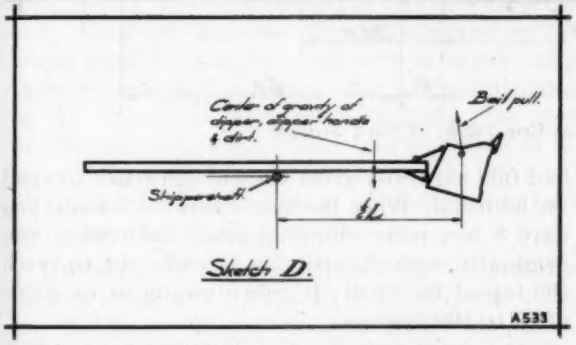



In sketch "B" we support the lever at its center, and suspend the same weight the same distance from the end where the lifting force is applied. The comparison shows that if a man lifted the weight by exerting his efforts on the end of the lever indicated by the arrow, he would exert an effort equal to three-quarters the weight in condition "A," where he would only have to use a lifting effort of one-half the weight in condition "B."

This applies in a like manner to the case of lifting the dead weight of the dipper, dipper sticks and dirt as indicated in sketch "C" with the sticks racked out and sketch "D" with the sticks racked in.




It can be readily seen from these sketches that working the machine close to the cutting face of the bank and with short sticks it will require less effort to hoist the dead weight than when working with the sticks racked out to the outer stop. Consequently when a smaller part of the fixed bail




pull is used in hoisting the dead weights there is more pull available for forcing the dipper through the bank. *This means a GREATER AVAILABLE DIGGING FORCE.*

### *By Moving Up Close Bill Increased His Digging Force Seventy-four Per Cent*

Bill got his extra digging force — *seventy-four per cent of it, or one and three-quarter times as much as he had before* — by moving his shovel up so that he was digging with only a short distance between the saddle blocks and the dipper teeth. That is why he got the dipper full faster and easier in the softer material, ripped up the harder material and crowded the dipper into it so much more readily. He was getting all the digging force possible out of the bail pull, though the bail pull itself was the same as it had always been. Bill admits that he was afraid of the new system at first, because he thought it was going to be harder to drop into the pit with the digging face crowded up so close to the front of the stripper. But he found after trying it for a little while that it was just as easy to drop in close with the short sticks.

### *Banks Must Be Well Shot*

It is not meant to insinuate that, by using this method, you can dig a hard slate and rock bank without it being properly shot. The hard rock foundation must be blasted well. But Bill's system gives you a chance to improve your present yardage, on any stripping operation, just the way Bill did.

### *How This Method Can Be Applied to Your Own Job*

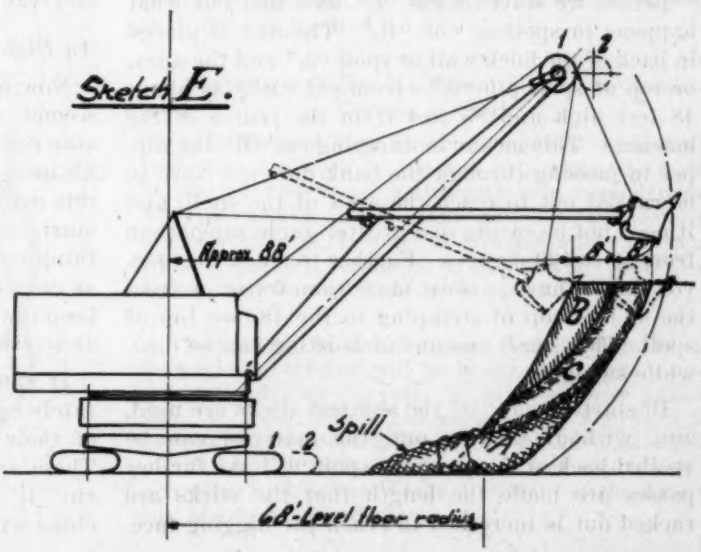
Boiled down, the whole thing amounts to keeping your shovel the proper distance from the face of the cut to give the maximum digging force with less travel for the dipper sticks and minimum strains throughout the shovel.

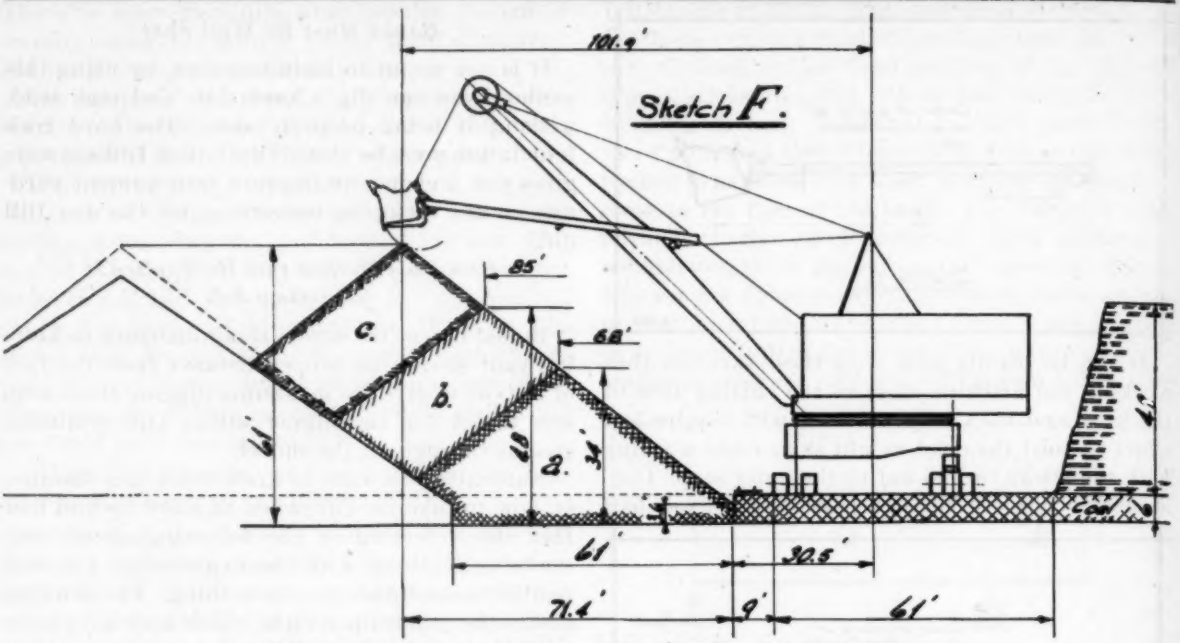
Naturally you want to know what this distance is, how to take the cut, when to move up and how far. By referring to the following sketch and studying it along with the explanation you will readily understand the whole thing. The drawing shows the general principle which may have to be varied somewhat to suit local conditions. After you have conscientiously tried it out for six months or so you will be telling everyone else about it.

The object is to work the machine as close to the bank as possible and dig WITH AS SHORT STICKS AS POSSIBLE.

### *It's as Simple as A-B-C When You Get the Hang of It*

Let us assume that the machine is moved to a short digging distance and started out on the new method by taking out cut "B" as shown in sketch E, in a pit with 42 feet of overburden and 61 feet wide. We are assuming that the last clean-up move was dumped forward or off the quarter at the toe of the spoil pile. This lets us get started off right, and makes the buck wall to spoil back of.






Dimensions Shown Are for Bucyrus-Erie 750-B, 12-Yard Stripper.

Using the dipper and handle as a measuring stick, with the lip of the dipper at the top of the cut, move the machine up to the bank until you have about 2 feet of racking left on the lower end. This simple rule will work with all sizes and types of machines, although there may be some slight variations in some instances. Then take out cut "B" which is dumped on top of spoil "a." The depth of cut "B" is 8 feet and should be kept as near to that measurement as possible. Cut "B" represents about 25 per cent of the total cut (which is A, B, and C) and is done under the most favorable conditions and with a SHORT HANDLE. So, when you have dug all you can with 10 feet of rack out (you started with 2 feet of rack) it is time to start cut "C."

Before we start on cut "C" let's find out what happens in spoiling cut "B." The dirt is placed in back of the buck wall or spoil "a," and the apex, or top of spoil pile "b" (from cut "B"), is about 48 feet high and 85 feet from the center of the machine. This means in dumping cut "B" the dipper in passing through the bank does not have to be racked out to reach the apex of the spoil, and it need not be swung to a greater angle range than from 50 to 100 degrees. Farther to reach the apex you do not have to hoist more than 6 feet or from the 42-foot top of stripping to the 48-foot top of spoil. This small amount of hoisting can be done while swinging.

In starting cut "B" the shortest sticks are used, and, without racking out, the material can be spoiled back of the previous spoil "b." As further passes are made the length that the sticks are racked out is increased to reach the digging face, and this naturally gives you enough reach to spoil the material. When the last of this cut is made you have 8 feet more dumping reach than when you originally started, and this is sufficient to reach the top of the spoil "b" when swung at an angle of 80 to 100 degrees.

### *You Do Not Have to Rack Out Any Farther to Dump Than You Do to Dig*

It must be noticed that, for half of cut "B," the dipper is high enough when leaving the cut to easily dispose of the material. On the remaining half it is necessary to hoist slightly above the bank clearance to clear the growing spoil pile, but never more than 6 feet. With this short swing, crowd and hoist, you pile up lots more dirt and save wear and tear on your machine.

### *An Eight-Foot Move and You're Ready for Cut C*

Now let's take out cut "C," which is really the second step of the operation. In most pits the material at this point is generally pretty hard, so we need all the digging force we can get to move this material easily. To get this digging force we must, as you know, use two short sticks so the thing to do is to move up the machine. Cut "C," as cut "B," should be 8 feet deep, so, in order to keep the machine the same distance from the bank as it was in making cut "B," we move up 8 feet.

If your groundmen cannot judge 8 feet accurately enough to suit you, then have them use one of their clean-up shovels for a measuring stick. These are usually 3 feet long. If you have made cut "B" 8 feet deep and move up 8 feet, the machine will then be in the same position as in start-

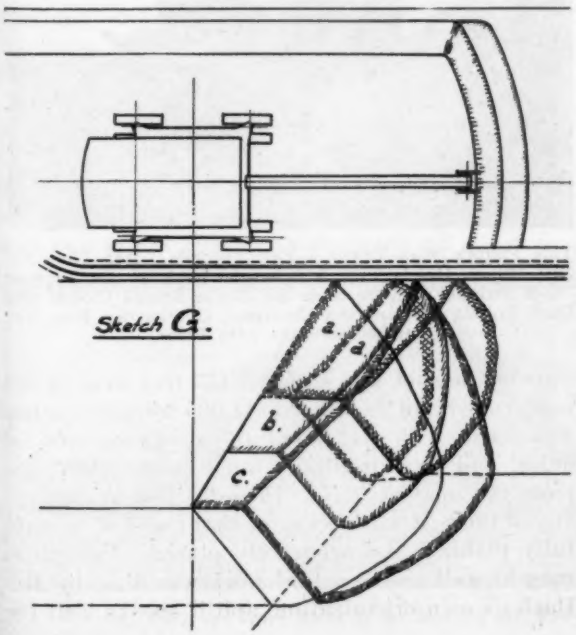
ing cut "B," and you should have about 2 feet of rack left on the lower end of the sticks when the lip of the dipper is at the top of the cut. Measure your distance with the dipper sticks, as previously suggested, to see how good a guess you have made.

Start digging out "C" and dump back of spoil "b." The range of swing is from 80 to 120 degrees, and it will be necessary to hoist higher than the top of the bank. Also you will have to run your sticks out a little farther on the last passes of the cut. This is the only cut when the maximum swing is necessary, and the additional hoisting and crowding can be done during the swinging time without any delay.

*Why the Hard Digging in Cut A Comes Out Easier*

When you have finished cut "C" you are ready for cut "A," which is really the last and clean-up cut. Here you have the hardest material in the whole bank to take out, and also in many cases there is loose dirt and rock that has rolled down on the coal or has fallen off the dipper. The rock in cut "A" comes up easier because there is no weight on top of it (you took this weight off in cut "B" and "C"). In addition your dipper is in a better position to dig the rock.

You may find it necessary to move the machine back in order to drop the dipper in without striking it against the cut or loose material. If so, move the machine back far enough but *no farther* than is necessary to drop in. With a little practice you will be able to move the machine back just far enough so that the point of the teeth will be at the toe of the loose spill when you drop in and are ready to start the digging stroke.




In occasional cases where a cat machine is on an outside curve in a very narrow cut or sometimes in the case of a truck-mounted machine it is not advisable to use the back-up move for cleaning up. In this case the method of cutting above described may be modified for a 6-foot move when benching a twelve-foot move after cleaning up.

*One Clean-Up for Two Moves*

This gives you only one clean-up for two moves or a 16-foot advance, which beats the old system of cleaning up after every move. You have another big advantage because the closer you get to the loose material the better you can clean it up. You get a longer sweep over the level floor before the dipper leaves the coal on its upward stroke.

Now we are in position to dig cut "A." Let's see about the spoiling of it. The height of cut "A" is only one-half the height of the total bank, and the dipper should not be hoisted any higher to dump than required for digging. This always keeps the action of the front end dead weights reduced, improving both the digging effort and the stability. With the short hoist the dump should be kept low, and this is done by dumping the material ahead, almost off the quarter, at the toe of the spoil pile. The maximum height of the pile from cut "A" is only 34 feet, so all the material can be dumped without hoisting higher than is necessary to dig out the cut. The sticks are long enough to dump without racking out farther, as the dipper is extended down to the coal. The swing is very short, being kept between 30 and 90 degrees for spoiling the entire cut. When cut "A" is completed you have your rock buck wall built out in front, and are ready to move up close and start the entire operation over again.

This is Bill's method, and if you will give it a six months' trial we are sure you will find it a lot easier on you and the machine, as well as faster than the old method.

---

**J. P. Holland Quiets His Steam Shovels to Await Coming of Stork**

J. P. Holland, San Francisco contractor, recently postponed his work on the new war memorial when he was advised that his steam shovels were dangerously disturbing an expectant mother in the vicinity of the work. "If the stork is late and I lose the contract, it will be a $6,000,000 baby," said Holland, "but I guess they're worth about that much."

---

"For 1928 the figures show that 3,899 miles of Federal-aid highway will be under construction and completed during the year. As large as these figures seem, it is not more than enough new highways to park our yearly production of new automobiles which will be built in 1928, if they were placed end to end," according to J. Borto Weeks, President of the American Motorists Association.

# 101,000 Pounds of Explosives Lift Approximately 150,000 Cubic Yards of Rock

## J. Robert Bazley Successfully Uses Largest Shot Ever Fired in the Anthracite Coal Field

**Mother Earth Seemed to Rise Up from Her Sleep and Shake Herself in Response to the Firing of the Single Cap Which Exploded Over 100,000 Pounds of Dynamite.**

J. ROBERT BAZLEY, contracting mechanical engineer, Pottsville, Pennsylvania, living up to his reputation of doing big things in a big way, recently successfully handled the largest shot ever fired in the anthracite coal fields. This shot, which used 101,000 pounds of explosives and was estimated to have loosened 140,000 to 150,000 cubic yards of rock, was fired at the Cranberry stripping operations which Mr. Bazley is handling for the Lehigh Coal & Navigation Company near Hazelton, Pennsylvania. To handle the shot 133 six-inch well drill holes were loaded. These were placed in lines as shown on the diagram and spaced about fifteen feet apart. The total depth of the 133 holes was 10,168 feet, making an average depth of 76 feet per hole. Owing to the fact that the rock to be shot consisted of the overburden of mined coal and was considerably broken, only 19 of the 133 holes could be sprung.

**Just a Few of the Empty Union Powder Boxes with the Five Sanderson-Cyclone Electric Drills Which Put Down the Holes in the Background.**

### *Careful Work Necessary to Avoid Damage to Nearby Structures*

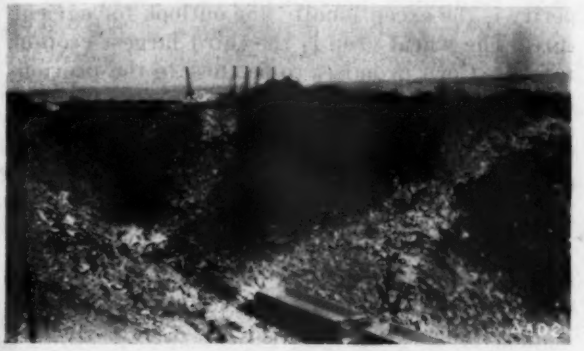
The shot was banked on the south and west by a previous shot, on the north by an open face and on the east by solid material. A Bucyrus 320-B electric shovel was digging eastward, and at the

**This Picture Was Taken a Few Seconds Later Than the One Which Heads This Article. In Back of the Bucyrus 320-B Stripper Can Be Seen the Dense Smoke Clouds and Dust Rolling Up, and the Shattered Overburden Has Not Yet Settled Back Into Place.**

time of the shot was situated 175 feet west of the western row of holes. An 11,000-volt substation was located 75 feet from the northern row of holes, and two dwellings were located 125 feet from the nearest holes. In order not to damage any of these, it was necessary that the shot be carefully planned and accurately placed. This planning as well as the actual work was done by Mr. Bazley's own organization, and it speaks well for

him and his men that the results were entirely successful and without damage to any of these nearby structures.

Including the springing of the holes there was used in this shot 84,800 pounds of dynamite, 16,200 pounds of black powder, 11,000 feet of countered cordeau and 2,000 feet of plain cordeau.



**150,000 Cubic Yards of Rock Lay Ready for the Excavator When the Dust Had Settled. This Photograph Was Taken Very Shortly After the Blast, as Is Indicated by the Smoke Still Seeping Out from the Bottom of the Cut Just Beyond the End of the Track.**

The amounts by percentages of the dynamite used were as follows:

| | | |
|---|---|---|
| 23,850 pounds — 4" x 8" — 60% | Ammonia | Dynamite |
| 25,050 pounds — 4" x 8" — 50% | Ammonia | Dynamite |
| 33,850 pounds — 4" x 8" — 40% | Ammonia | Dynamite |
| 2,050 pounds — 2" x 4" — 40% | Ammonia | Dynamite (For Springing) |
| 84,800 pounds | | |

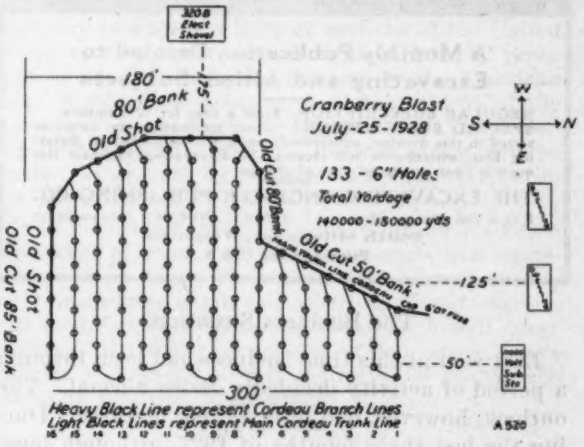
The dynamite was furnished by the Union Explosives Company of Clarksburg, West Virginia, and the black powder by the Anthracite Powder Company of Barnesville, Pennsylvania.

The blast was set off by a single No. 6 Cap attached to the Cordeau trunk line which bordered the drill holes as shown on the accompanying diagram. Branch lines from this main trunk line connected with the individual holes.

Mr. Bazley at his Cranberry stripping operations is using a Bucyrus 320-B electric shovel equipped with a 7-yard dipper loading into 30-yard Clark side-dump cars of standard gauge, which are hauled by three 50-ton Vulcan locomotives, and two 42-ton Heisler locomotives.

### *Many Large Projects Being Handled by J. Robert Bazley Organization*

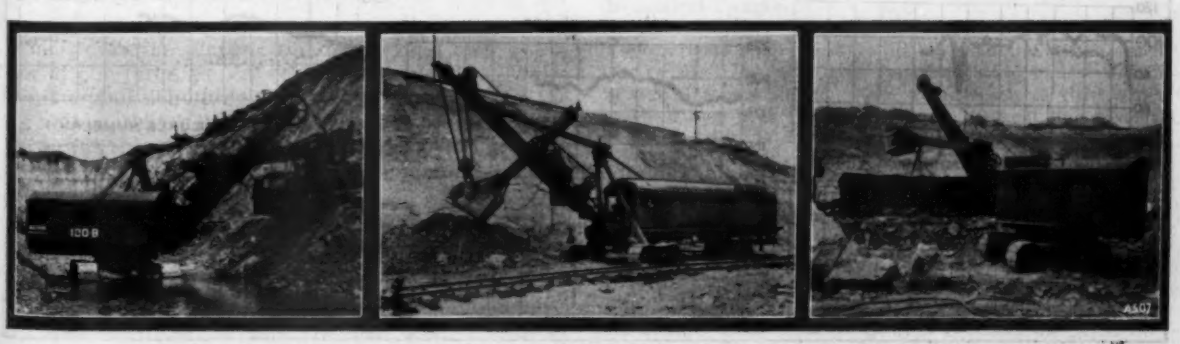
The Cranberry Creek Colliery is, however, only one of a number of large stripping projects that are being carried on by the J. Robert Bazley or-




ganization. Prominent among his various stripping contracts is that of the P. & R. Bast Colliery at Ashland, Pennsylvania, the Colonial Colliery at Natalie, Pennsylvania, and the Mill Creek Coal Company operation at Morea, Pennsylvania. On these other operations in various parts of the an-

**General View of Operations of J. Robert Bazley Organization for the Mill Creek Coal Company at Morea, Pennsylvania.**

thracite field Mr. Bazley is using the following shovels: one 103-C Bucyrus electric shovel, one Bucyrus 100-B electric shovel, two Bucyrus 50-B electric shovels, one 78-C Bucyrus steam shovel, one Bucyrus 70-ton steam shovel, one Bucyrus 35-B steam shovel and one Type "B" 1¼-yard Erie steam shovel.



**Here We Have Some of the Shovels Mr. Bazley Is Using on His Various Stripping Contracts.**

The EXCAVATING ENGINEER

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## The Business Situation

Last year at this time business had been through a period of activity decidedly above normal. The outlook, however, had unfavorable features. During the last three months of 1927, although business was active, it was not unusually good.

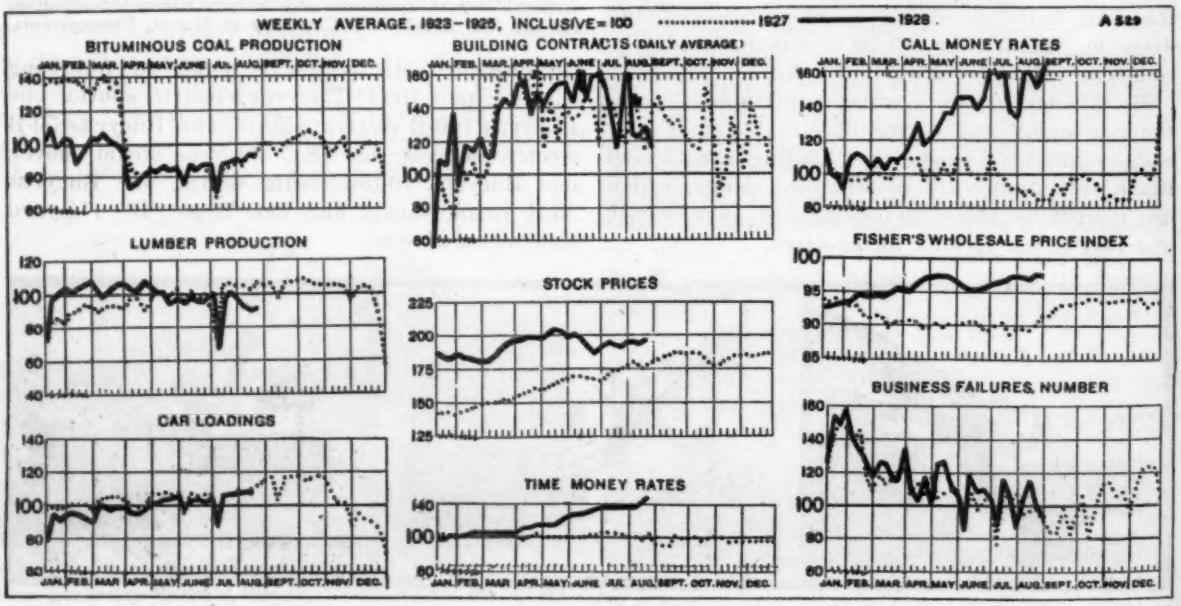
This year business has been through a period of remarkable activity. It has laughed at the old adage that "business is always poor during a presidential election year," and having gone through a period of great activity we are promised — by the signs of the times — equal or greater activity for the months of the year yet to come.

The stock market is no longer the business indicator that it was some years ago, but its activity is still an indication of the feeling and the prosperity of the country, particularly when, as today, so many outsiders — non-professional traders, from all over the country — are buying securities. The market has had a remarkable year; prices have been carried to a point where perhaps more than a technical reaction may appear, but it has ridden many a storm during the past few months and may be able to carry the "bullish" aspect, it has had for so long, for a few more months.

Perhaps one of the most favorable of the factors which give reason for the general feeling of prosperity is the exceptionally fine outlook for agriculture. The wheat crop is the third largest crop on record. Corn promises to be close to the previous record and other grains are on an equally good footing. The farmers' condition is not made worse by these large crops, for any surplus will probably be absorbed by Europe where crops have been backward.

Construction contracts to the amount of $516,970,200 were awarded last month in the 37 states east of the Rocky Mountains, according to F. W. Dodge Corporation. These states include about 91 per cent of the total construction volume of the country. The decline from July of this year was about $66,000,000, or 11 per cent. The decrease from August of last year was about $35,000,000, or 6 per cent. The New England States and the Northwest were the only two districts showing increases over their July 1928 records, and the Central West, Northwest and Southeastern States were the only two districts showing increases over their July 1928 records, and the Central West, Northwest and Southeastern States were the districts showing increases over their August 1927 records.

Last month's record brought the amount of new building and engineering work started in these 37 states since the first of this year up to $4,545,270,100, as compared with $4,274,871,100



for the corresponding period of last year, the increase being 6 per cent.

Analysis of the August building record showed the following important classes of work: $213,705,400, or 41 per cent of all construction for residential buildings; $118,890,400, or 23 per cent, for public works and utilities; $58,910,500, or 11 per cent, for commercial buildings; and $42,606,700, or 8 per cent, for industrial projects.

New work contemplated last month in the 37 Eastern States amounted to $612,340,100. There was a loss of 5 per cent from the amount reported in the preceding month and there was a drop of 11 per cent from the amount reported in August of last year.

### A New Fish Story

In the old days Ananias had a pretty good reputation as a first-rate liar. In fact he held his reputation as an expert in falsehoods until along in the middle ages when the author who produced the character of Baron Munchausen brought on the scene a character in literature who cast a shadow over all previous liars.

Baron Munchausen has held his reputation for a considerable length of time, and he won it partly by

telling the most outrageous stories you ever heard and seemingly proving them to be true.

Perhaps better known in the timber regions is Paul Bunyon, logger extraordinary, and owner of the famous blue ox.

All these, however, must look to their laurels for here is a man who sends us a story of a fishing trip and proves it to be true with the accompanying picture. You will see that the shovel is a Bucyrus 50-B Diesel. We cannot tell you the make of wire rope nor do we feel justified in giving you the name of our hero. Neither do we know how much the fish weighed — look over the picture and make your own guess. But of one thing we are certain and positive. We've heard lots of fish stories, including the one about the big fellow that got away, and some of them were *good*; but this one wins the solid gold fish and really ranks the author with the famous historical characters above.

### Large Attendance Expected at National Road Congress of Mexico City

The Second National Road Congress of Mexico to be held at Mexico City, Mexico, will open on October 3rd and continue through October 6th. President Calles under whose administration the good roads movement in Mexico has made excellent progress will formally open this Congress of road engineers and officials of approximately twenty nations. The American Road Builders' Association, through its Pan-American Division, has accepted an invitation to participate in the Road Congress and will invite engineers and officials from all sections of the United States to be present. Senor Octavio Dubois, president of the Pan-American Division of the American Road Builders' Association is also president of the Mexican National Highway Commission. The Governors and delegates from all Mexican states will be present, as will official representatives of other Latin-American nations.

"In connection with the convention an elaborate exposition of road machinery, materials and equipment will be held. More than fifty manufacturers, including a large number of American manufacturers, will participate in this exposition which will cover in excess of 120,000 square feet of floor space," says Charles M. Upham, secretary-director of the American Road Builders' Association.

### Early Reservations Urged for Those Attending January Road Show at Cleveland

Persons planning on attending the convention and road show at Cleveland during January, should forward their reservation blanks at once to A. J. Kennedy, vice-chairman of the Hotel Committee, Tower Terminal Building, Cleveland, Ohio. While the American Road Building Association advises there will be more adequately equipped hotels for the 1929 session, opening January 14th, it is still advisable to make the earliest possible reservations.

A number of new hotels have been constructed since the last convention in Cleveland, and others have been enlarged. Still it is advisable to make the earliest possible reservations in order to be assured desirable rooms.

Reduced fares will be available, certificates being issued by the various railroads entitling delegates to one-half fare on the return journey. These certificates must be obtained at the time of purchasing tickets to the convention.

### Favoritism

During the World War the officers of a colored regiment had difficulty in making their men sign up for Uncle Sam's brand of soldier life insurance.

It seemed that with Uncle Sam back of the insurance it was undoubtedly dependable, but the colored men would have nothing to do with it. Finally a colored non-com from another regiment heard of the situation, and he volunteered to sell the soldiers insurance.

"Listen, heah," he said in his speech to them, "if yo' is insu'ed, Uncle Sam values yo' at ten thousand dollahs each. If'n yo' ain't insu'ed, Uncle Sam done stan' to lose nothin' does de Germans git yo'. Now, ah leaves it to yo.' Which bunch of men does Uncle Sam put in de front line trenches where de killin' is de thickest — ten-thousand-dollah-men, or de cheap colored boys?" — *Wall Street Journal.*

### Fifteen Minutes a Day Did It

They grinned when the waiter spoke to me in Greek, but their laughter changed to astonishment at my ready reply.

"I wanna roasta bif san'wich, str-r-romberry pie, two cup skawfee," was the simple and clear statement I made without hesitation. — *Life.*

# DEVICES YOU OUGHT TO KNOW ABOUT

### New High Pressure Greasing Equipment

Grease-Rite, a new High Pressure Grease Gun, is now being placed on the market for oiling and greasing excavating machinery and equipment by the *Grease-Rite Corporation of Cleveland, Ohio.* The change over to the Grease-Rite system is done quite easily without loss of time or shutting down. The conventional grease cup is replaced with a special dust-proof fitting which is filled from time to time with lubricant under high pressure from the gun. Under this system it is claimed that much better oiling is attained.

The gun is loaded with lubricant by removing the rear cap. The nose of the gun is slipped over the fitting, an ingenious nozzle construction hugging the body of the fitting when pressure to the lubricant is applied.

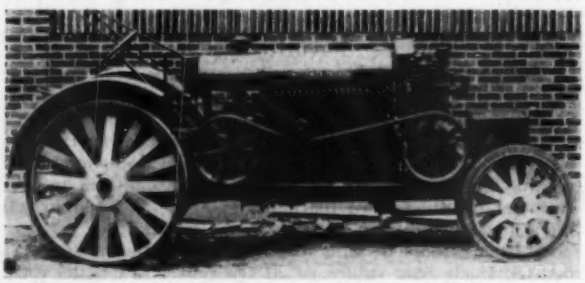
The gun is operated by pushing the barrel forward, and pressure and volume can be regulated by simply pushing a long or short stroke. A special valve arrangement prevents air locks from interfering with the uniform flow through the nozzle.

The gun is a self-contained unit, very convenient in close quarters and inaccessible places. It is light weight, clean to handle and saves considerable time. The No. 2 size retails at $6.50, No. 3, a larger size, is made for oiling extra heavy machinery.

### New Air Compressor for Use with McCormick-Deering or Fordson Tractors

A self-propelling, four-wheel air compressor, capable of hauling heavy loads behind itself and moving about under its own power, is being manufactured by the *Pontiac Tractor Company, of Pontiac, Mich.*

The compressor is a Quincy Type W-4 of 124-cubic-foot displacement, having a separate radiator with pump-driven circulation. This holds the temperature of the air coming from the compressor 60 to 70 de-



grees below the temperature of compressors which are cooled from the motive power radiator. The compressor has a three-bearing crankshaft and force-feed lubrication. This unit is controlled by a Penn unloader, with a hand unloader attachment. The compressor with air tank and tool box are mounted on a frame which attaches to either the McCormick-Deering or Fordson tractors. Power is taken from the tractor to drive the compressor through the power take-off pulley, which has a clutch allowing it to be thrown into or out of gear at will.

### New Stolle Spreader Built by Practical Road Builder

*Stolle Spreader Sales Company of 908 Victoria Building, St. Louis, Missouri,* have placed on the market a new spreader for distributing material from dump trucks, and which handles any aggregate from sand to 3-inch stone. The Stolle spreader was designed by Frank C. Stolle, a well-known contractor and quarryman. Several years ago Mr. Stolle, after considerable experimental work, built a spreader embodying the basic principles of the present Stolle spreader and used it in his road construction work with considerable success. A number of minor improvements and refinements have been made as the result of thorough tests and hard usage to which the spreaders were subjected.

The Stolle Spreader can be attached to any hoist dump truck by attaching four hooks. A chain-driving device connects with the hub of the rear wheel. Folding legs (detachable if desired) are provided for use in changing the spreader from one truck to another.

To spread the aggregate the body of the truck is raised, and the tail gate released. This permits the material to flow into the hopper of the spreader, which contains revolving agitators and adjustable shutters which can be regulated to spread the required amount. Adjustments can be made to spread from three pounds of dry sand to 200 pounds of coarse aggregate per square mile, and the width can be regulated from 8 inches to 8 feet. It is also possible to close one or more shutters to permit filling of ruts where desired. Spreading is equally efficient whether truck is driven backward or forward. The machine is designed to give a steady flow of material, irrespectively of large stones which may be contained in the load.

Further information regarding this device, which it is claimed by the manufacturers, will save from 60 per cent to 70 per cent of the cost of aggregate distribution, may be obtained by writing the Stolle Spreader Sales Company at the above address.

### New General Electric Protective Cream

Operators and shovel crews will, no doubt, be interested in a new protective hand cream which has been developed by the research laboratories of the *General Electric Company.* This cream, which is known as G. E. Protective Cream, is furnished as a safety measure to those men in safety plants whose hands are exposed to oil, dirt, grease, varnish and other causes of skin diseases and irritation, encountered with in their work. This cream is applied before beginning work and forms an invisible film which quickly dries and is not slippery. By filling the pores of the skin it prevents oil, grime, etc., from

working into the skin, and subsequent washing in warm water quickly removes the film or cream and all other stains which would have become worked into the skin tissues.

This G. E. Protective Cream is packed in tubes which sell at 25 cents and also 1-pound cans for industrial use. If the cream is not on the market in your territory it may be secured by mailing orders direct to the *General Electric Company, Merchandise Department, Bridgeport, Connecticut;* or from any General Electric distributors.

### Cement Industry Making Real Progress in Safety Campaign

The Portland cement industry made July another month of record-breaking safety in operation. Following the lowest accident month in its history, July mishaps numbered only 65 lost time and one fatal. June, 1928 set a record for the industry with 48 accidents causing loss of time and one fatality. July, 1927 recorded 103 mishaps and two fatalities. Thus with more mills reporting to the Portland Cement Association than last year accidents for the month of July were reduced 37 per cent.

Only two hundred accidents were suffered by cement mills and quarries located throughout the United States and Canada during the past three months — 10 per cent less than for any other similar period since accident statistics have been reported to the Association. Figures further show that the first six months have been operated with 15 per cent less accidents than ever before for a half year. The total accidents for seven months of 1928 are 618 lost time and 16 fatal — last year 789 lost time and 18 fatalities were suffered.

In addition to these unusual safety figures two cement mills have operated for over two years without accident. The Cowell, California, plant of the Cowell Portland Cement Co., and Newcastle, Pennsylvania, No. 3, of the Lehigh Portland Cement Co., are the mills reaching this high plane in safety work. Thirty-eight plants in the cement industry have operated since January 1, 1928 without an accident involving the loss of time. These plants are still in the race to receive the Portland Cement Association safety trophy for a year's operation free from accidents.

According to a statement made public by the United States Bureau of Mines, the quantity of gypsum mined in the United States in 1927 was 5,346,888 short tons, a decrease of 288,553 tons, or 5 per cent, compared with 1926. This production has been exceeded only in 1925 and 1926, and was about twice as large as that of 1917.

## From THE MAIL BAG

McLANAHAN-STONE MACHINE CO.
GAYSPORT FOUNDRY
HOLLIDAYSBURG, PENNSYLVANIA

August 16, 1928.

The Excavating Engineer,
South Milwaukee, Wis.

*Dear Sirs:*

We note your article in the August number of your paper, asking for some information in regard to the first steam shovel patent.

We for many years had a complete set of patterns for the Otis steam shovel, and made many repairs for J. King McLanahan, operating at Ore Hill, Blair County, Pennsylvania, and the Pinkney Mining Company, Pinkney, Tennessee (J. King McLanahan, Proprietor), and a few repairs for the Carnegie Steel Company, and several others that we cannot recall at the present time. Mr. McLanahan, who was president of our company for many years, operated this shovel at his Ore Hill plant, and said they would dig anything. He was so well pleased with their operation that when he made purchase of the ore land at Pinkney, Tennessee, he had four of these machines in operation.

We have no copy of the patent for this machine, but are enclosing a circular issued by John Souther & Company, Boston, Massachusetts. It shows a cut of the shovel, and list of the parties using same.

We, about ten or fifteen years ago, destroyed all the patterns for this shovel, as we never had any more repairs for same, and supposed there were no longer any in use.

Very truly yours,

McLANAHAN-STONE MACHINE CO.
Wm. F. Kirk, Manager.

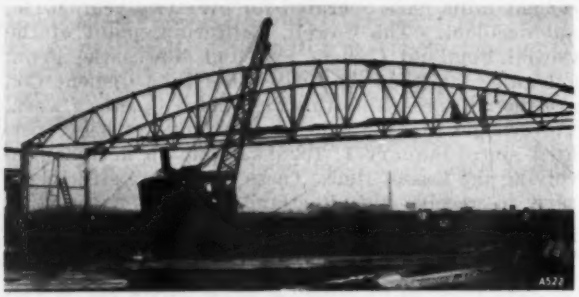
WFK:LF

We have reproduced in this column the old wood cut illustration used as the cover of the Souther Catalog which Mr. Kirk so kindly sent us. Our most sincere thanks go to Mr. Kirk of the McLanahan-Stone Machine Company for his courtesy. We will be delighted to have further comments or receive other documents relating to early history of the industry of excavation for *The Excavating Engineer* museum. We would like especially to obtain a copy of Patent No. 1689 issued to William S. Otis of Philadelphia on February 24, 1839, covering a crane excavator for excavating and removing earth. We have a copy of the text of this patent for the original steam shovel, but we have been unable to locate a copy of the drawing which accompanied it. — *Ed.*

# SHOTS FROM THE FIRING LINE

## New Jersey Notes

BY HARVEY E. REED



Here is the way they build aeroplane hangars in New Jersey. The illustration shows steel being erected for the largest aeroplane hangar in the country at Port Newark, New Jersey. The width of the hangar is 120 feet, and the trusses which are being placed by the Erie steam shovel are 120 feet long, 12 feet high and weigh 6 to 7 tons each. Fred E. Martin of 72 Orchard Street, Maplewood, New Jersey, is the owner of the Type "B" Erie shown above. The machine happens to be approximately seven years old.

## Canada

*Montreal and Vicinity*

BY J. M. WARD

It is with deep regret, that we, this month, have to report the deaths of several prominent people in the construction field.

Mr. F. C. Peckham, of Messrs. Gorman and Peckham, fell from a trestle and fractured his skull, dying a few hours later. Mr. Peckham was 50 years of age, and had been contracting with Mr. Gorman since 1910.

Mr. Andrew Wheaton, who was one of the partners in the Dominion Construction Company, passed away about two weeks ago.

Mr. J. R. O'Neil, formerly of O'Neil and Loney, died about three weeks ago.

Mr. C. V. Delamere, resident engineer for the City of Montreal on the construction of the new Tramways Line, died very suddenly. Mr. Delamere was formerly on the Construction Staff of the Canadian Pacific Railway.

We were well acquainted with all the above, and we extend our sympathy to their families.

Robertson and Janin have undertaken a large sewer and paving job for the City of Three Rivers.

Nelson River Construction Co. are doing sewer work for the City of Three Rivers.

W. I. Bishop & Co. have recently been awarded a contract for water power development for the McLaren Development Co., Ltd.

The large project known as the Beauharnois Power Co.'s Development is expected to be started this fall, and preparations are being made for an active program of construction next spring.

William Cooke, of North Sydney, is doing road work for the Nova Scotia Government, and has just purchased a P. & H. gas shovel. Mr. Cooke is also connected with Cooke Construction Company of Montreal.

Aleck Finlayson has returned to Nova Scotia, where he intends to remain for the next few months.

Bill Normand is back on the job with Gorman & Peckham running a Bucyrus-Erie 20-B shovel. Bill has been on this machine steadily since 1924, with the exception of a few weeks of recent illness.

*Toronto and Vicinity*

BY C. F. ENGLAND

The T. A. Brown Co., Ltd., are making good progress on their Gate Yard contract for the Department of Railways and Canals at Port Weller, Ontario.

A. Chercho of North Bay has a contract for waterworks for the town of Blind River, Ontario.

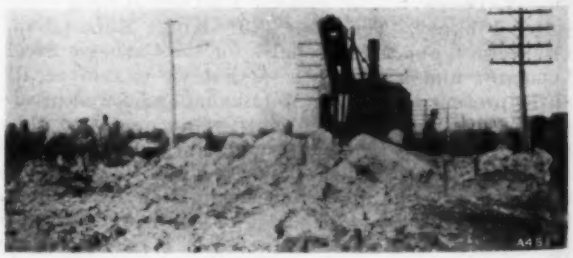
Geo. A. Fuller Co., Ltd., have been awarded contract for foundations on the new T. Eaton Co. building at Yonge & College Streets, Toronto, Ontario. Lioni & Co. are doing the excavating on this job.

Broderick Bros. have contract for sewers at Smith Falls, Ontario.

## Pennsylvania Notes

Jack Clegg, operator, of Black Lick, Pennsylvania, sends us the above picture taken last fall near South Bend, Pennsylvania. The Erie shovel steam roller and ten-ton caterpillar tractor are just wading across Crooked Creek near

South Bend, Pennsylvania. Frank James, contractor of Johnstown, Pennsylvania, is the owner, and the machine forded Crooked Creek after completing his road job between Shellocta and South Bend, Pennsylvania.



Charles V. Long of Route 2, Hughesville, Pennsylvania, sends us the above views of an Erie Type B steam shovel on a job handled by Winston & Company, of Richmond, Virginia, between Carlisle, Pennsylvania, and Newville, Pennsylvania. Excavation was in solid limestone "with not enough dirt to plant a grain of corn," as Charlie Long says. It was neces-

## SHOTS FROM THE FIRING LINE — Continued

sary to keep an accurate grade, the ground being cross-sectioned daily. Even so, Mr. Long with the Erie turned out an average of 300 yards in ten hours and a thirty-day average of 7800 cubic yards.

---

J. L. Kovatch at 1204 S. 46th Street, Philadelphia, Pennsylvania, sends us this snapshot of a real Bucyrus-Erie 50-B dipper full. It shows Mr. Kovatch and his baby and the 50-B he operated for John Young on the Syracuse Reservoir job.

### Southern States Notes

BY CHESTER COULTER

Brooks-Callaway Company of Atlanta have just been awarded a million-dollar contract by the Southern Railway Company for double-track work in Kentucky. They have already moved on to the work four railroad-type shovels and necessary hauling equipment.

---

The General Construction Company, composed of Captain W. S. Holloway, and J. B. Fraser of Fort Lauderdale, Florida, are moving their equipment to Winston County, Alabama, to start work on their 400,000-yard state highway job. This should be a particularly interesting operation as the work will be completely motorized with a one-yard Bucyrus-Erie Diesel shovel loading into 2½-yard steel mules, mounted on International tractors. We are confident that the work will be visited by many of our local highway contractors.

### Birmingham and Vicinity

BY R. S. WELFER

Considerable interest is being manifested by Alabama contractors in the Mobile County's $5,000,000 road-building program. The first contracts were let in August. Others will follow at brief intervals.

---

C. G. Kershaw Contracting Company are starting work on their 3½-mile railroad contract near Russellville, Alabama. This will connect with the new Woodward Iron Company brown ore mine. The George Boss Excavating Company are helping with the grading.

---

Roy E. Guyton has returned from West Virginia, and is operating a shovel not far from his home at Stewart, Miss.

---

J. D. Liles is producing good yardage with a Type B-2 for Breland & Myers near Gadsden.

---

S. Hamilton, recently operating for the Gulf, Mobile & Northern Railroad, called on us while enroute to his home at Carrollton, Alabama.

### Southern Ohio Notes

BY S. R. WALLER

The Hunt-Forbes Construction Company of Ashland, Kentucky, and Huntington, West Virginia, have completed work in Fort Thomas, Kentucky, and have moved their Bucyrus-Erie Gas + Air Shovel to the Greenup and Vanceburg Road in Greenup County, Kentucky. "Gum" Jones of Ashland, Kentucky, who has been with Hunt-Forbes Construction Company several years has been operating the Gas + Air 2.

---

Hickey Bros. have about completed the Cincinnati Rapid Transit on which they have been working for several years.

# A SMOOTH FIRM GRIP

No jerking or grabbing with *Asbesgraphite!* On shovels, dredges, draglines, cranes, hoists, pavers, trucks, etc., this Gatke product has proved its ability to give longer life, trouble-free service, and ability to speed up operations because of better and smoother control.

Asbesgraphite is a self-lubricating, non-scoring asbestos friction material unaffected by heat, cold or moisture.

It ends friction troubles.

You are missing a bet if your machines are not Asbesgraphite equipped. The cost of a trial installation is negligible. It's not an experiment, for we guarantee satisfactory service—*order today.*

**It is not Asbesgraphite unless it is marked "GATKE"**

***We also manufacture Asbestos Brake Lining in any width, thickness or length***

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Marion, Bucyrus, Monighan, Osgood, Northwest, Byers, Ohio Locomotive, Industrial, P. & H., Keystone Driller, Massillon, Thew, Erie, Page, Moore Speedcrane, Link Belt, And Others.

## THOMAS L. GATKE

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*Chicago Office:* Railway Exchange Building
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*For*
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In writing to Thomas L. Gatke please use post card bound in the center of this number.

## SHOTS FROM THE FIRING LINE — Continued

Nearly all of the excavating on this job has been with their three Erie Type B Shovels.

Very satisfactory reports are coming in from Elwood Comer of Cincinnati, who is doing the excavating on the new reservoir being constructed by Hodges Construction Company of Cincinnati. Mr. Comer is using one Bucyrus-Erie 41-B and three Type "B" Erie shovels on this work.

Bob Alfred, who has for some time been operating an Erie Type "B" for Robert Richardson in Cincinnati, is now operating for Hickey Bros.

### Ohio Notes

BY E. P. DOYLE

Here is the way G. L. LaBoiteaux Company handle their contract for grading ground for the erection of the new oil tanks being erected by the Sun Oil Company at Toledo, Ohio. In using Erie steam loading into Autocar trucks on finishing up with a 2-Ton D Caterpillar with blade grader in the shallow places.

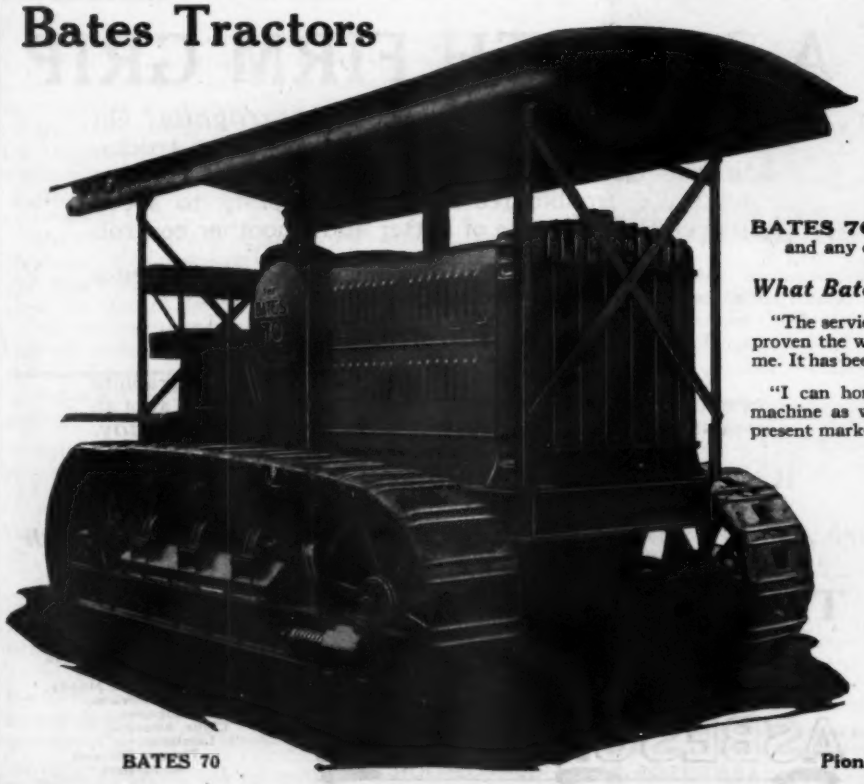
The above pictures show the method used by J. B. Christman of Bay Village, a suburb of Cleveland, for the excavation of basements. Mr. Christman has two Model "20" Cletracs which he keeps busy on this kind of work.

### Detroit and Vicinity

BY P. M. RICHARDS

A. C. Duesing is making rapid progress on their subcontract for a sewer in the city of Midland, Michigan. He is


# Bates Tractors



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**BATES 70** — Made for 12-foot Graders and any of the largest tractor tools.

***What Bates Customers Say:***

"The service our machine has given us has proven the worth of the BATES machine to me. It has been a money-making investment."

"I can honestly recommend the BATES machine as what I consider the best on the present market." —An Illinois Contractor.

"I think the BATES tractor a very good one. It has very good pulling power on a Grader."
— A Pennsylvania Contractor.

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**JOLIET, ILL., U. S. A.**
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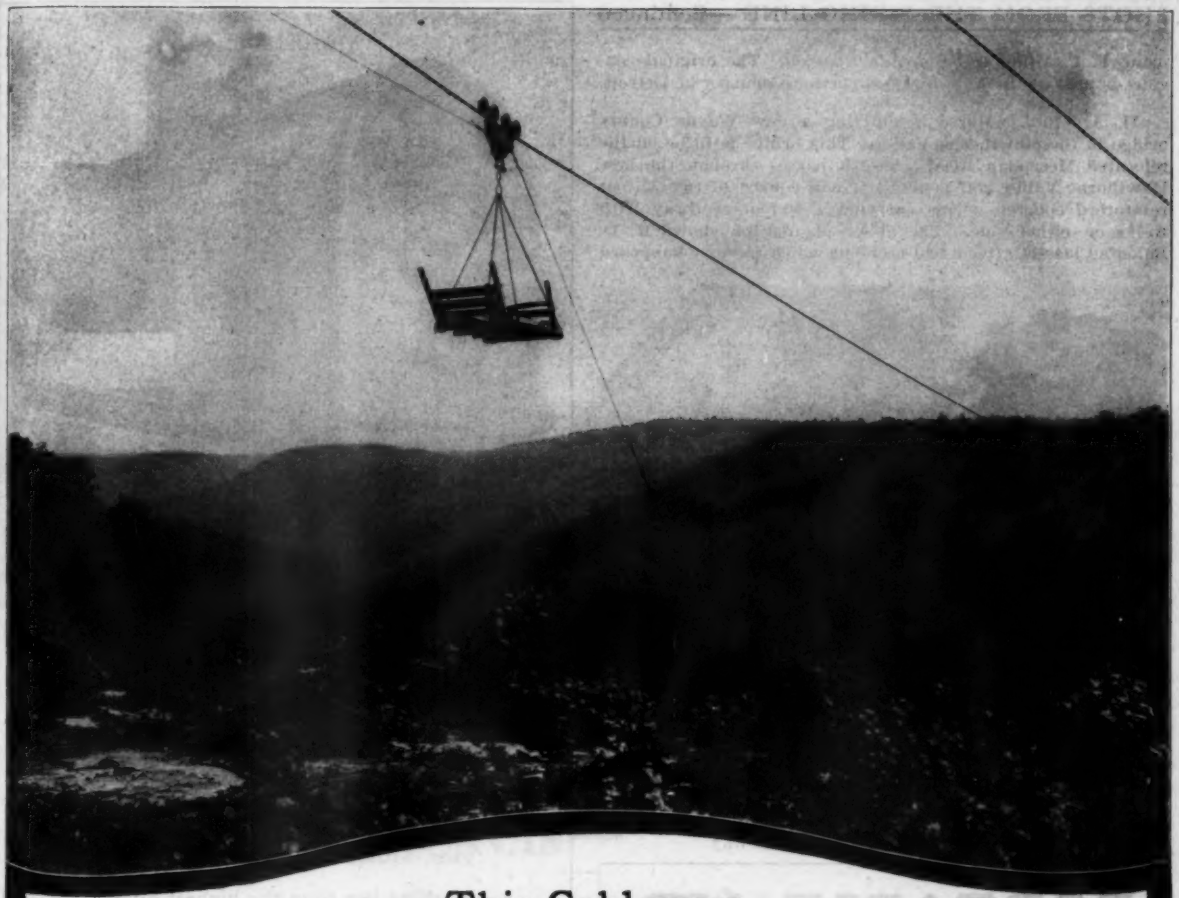

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# TRAMWAYS AND CABLEWAYS

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You may have a problem which can be solved
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## SHOTS FROM THE FIRING LINE — Continued

using F. P. Miller's 41-B to dig this job. The original contract is held by the Farway Construction Company of Detroit.

H. A. (Pink) Morse is building a new Wayne County bridge in the Hawthorne Valley. This bridge is to be on the relocated Merriman Road where it passes through the new Hawthorne Valley golf course. It will consist of two 35-foot reinforced concrete spans carrying a 40-foot roadway with walks on either side. The above photograph shows R. D. Baker's Class-14 after a bad accident which recently happened

on their section of the Southfield Road open county drain. The machine was working on a down grade, and in making a move it got away from the crew and rolled into the cut. The picture was taken after the machine had been partly righted, it coming to rest on an angle of about 45 degrees. The only broken part was one caterpillar anchor casting. In the rear can be seen Mr. Wheeler's Gas + Air machine which was utilized in digging out the Class-14.

The Detroit Drainage Construction Company have started work on a large sewer west of Coolidge Highway.


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360 cu. ft. size illustrated, $3,620.00, F. O. B. Factory.

Furnished in sizes ranging from 15 to 360 cu. ft., both portable and stationary engine or motor driven, or truck and tractor mounting. "SCHRAMM" Compressors cover all requirements of the field.

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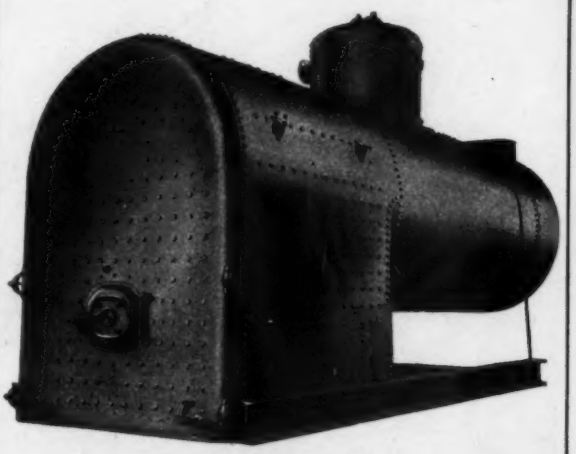

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PRESSURE ENOUGH to speed her up and handle the hardest digging.

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# Electric Shovels—
## Servants of Industry

These shovels require no fuel—electricity operates them. Water lines are unnecessary—and there is no "steaming up" to cause delay.

G-E Motorized Power on shovels effects remarkable economies. Reduction in man-hours, in power costs, and in maintenance expense; superior flexibility, higher speed, and greater simplicity of control—these are some of the reasons for the rapidly growing use of electricity for shovel operation.

G-E equipped shovels have an enviable record for performance—that's why G-E equipment is almost invariably specified. Your nearest G-E office is always ready to furnish information and advice.

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## SHOTS FROM THE FIRING LINE — Continued

The Ann Arbor Construction Company are rebuilding the Detroit-Grand Rapids highway known as U. S. 16 just west of Howell, Michigan. As no suitable detour was available, single track shoulders were built on either side of the old pavement, and are being utilized while the center section is being rebuilt.

---

The W. E. Lennane Company are lowering the Grand Trunk tracks across Gratiot Avenue in Detroit. This is a much-needed grade separation.

---

The Jutton-Kelly Company are building the Pere Marquette Warren Avenue grade separation on West Warren Avenue in Detroit, and the Mark R. Hanna Company are building the Michigan Central Emerson Road grade separation in Dearborn, while the Walsh Construction Company are engaged in another grade separation in Hamtramck.

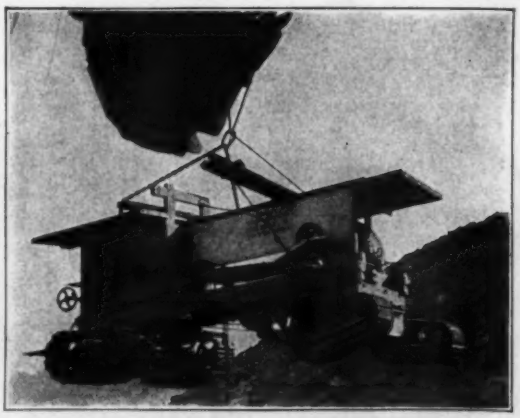
---

The Biggs Construction Company have completed their steel water main job at Dearborn, giving Dearborn Detroit city water, and are now overhauling their equipment.

### Wisconsin Notes

BY E. P. DOYLE

Bids for building a railroad overhead and concreting the 3½-mile gap on Highway No. 36 between Lyons and Springfield were received at Elkhorn last Wednesday, and the work will be started next week. This is a Federal Aid Project and finishes No. 36 from Milwaukee to the Illinois line, except four or five miles north of Walworth at the west end of Lake Geneva.

**Why Loomis "CLIPPERS" Predominate in the Blast Hole Field**

If you know "CLIPPERS" you will appreciate why "CLIPPERS" were chosen to put the holes down ahead of these giant strippers.

For hard drilling and fast drilling the "CLIPPER" can't be beaten. The holes go down and your drill footage goes up hour after hour, day after day, month after month. The machine, exceptionally fast, is even more remarkable for the sturdy stamina and special features of construction which cut down delays and save you money. *Write us for information.*

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What you really buy

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ROEBLING "BLUE CENTER" STEEL WIRE ROPE is selected by the largest shovel manufacturers as a part of their standard equipment because of its long life in service.

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JOHN A. ROEBLING'S SONS COMPANY Trenton, New Jersey

## SHOTS FROM THE FIRING LINE — Continued

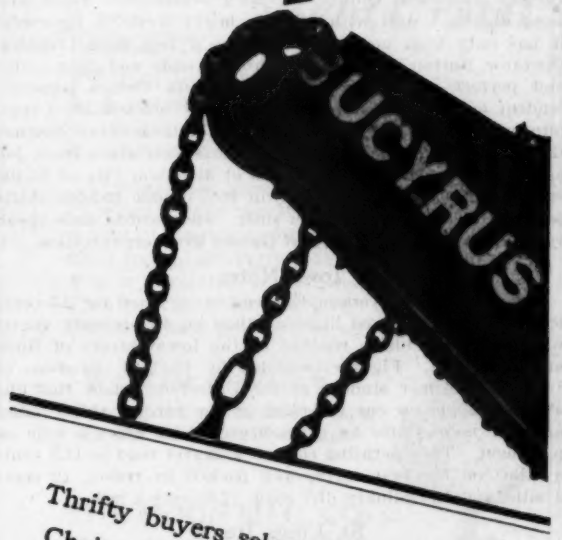
### Illinois and Missouri Notes

BY H. H. BUCHANAN

Out on Gaines Bros. Company job near Rushville, Illinois, we find standing before one of their GA-2 shovels Frank Gaines, president, George H. Knutzen, Bucyrus-Erie service en-

gineer, W. H. Gaines and Earl Gaines. Unquestionably Gaines' outfit is the fastest in Missouri and Illinois, and we doubt if there is a faster outfit in the country. Gaines Bros. Company are handling two road jobs located six miles and twelve miles respectively from Rushville, Illinois. Both are excavating jobs of 750,000 cubic yards of Class "A" and Class "B" materials. One of their Erie Gas + Air machines is in a 35-foot cut, trimming a two-to-one slope and loading 1000 to 2000 cubic yards per ten-hour shift. The shovel is served


Scotch Thrift

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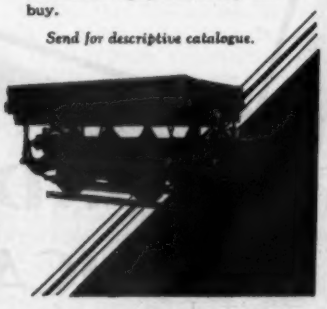

KOPPEL INDUSTRIAL CAR AND EQUIPMENT CO.
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## SHOTS FROM THE FIRING LINE — Continued

with ten-ton tractors, seven-cubic-yard Western crawler wagons, and Hughes & Keenan Iron mules are used in hauling. Double shifting, they have had a 59,000-cubic-yard monthly estimate. In a year and a half this Gas + Air has handled 120,000 cubic yards on its first job, over 100,000 cubic yards at Bowling Green, Missouri, 275,000 yards in five and one-half months at Quincy, of which 50,000 cubic yards was hard digging. And with all this heavy work to its credit it has only been necessary to make a few minor repairs. Operator Burton keeps the machine in spic and span order and perfect operating condition. Frank Gaines, superintendent on this job, states that highway officials have complimented him on the perfect slope left on their cuts. Another Gas + Air handles excavation on the other Gaines Bros. job and holds a record on its last job at Jefferson City of 15,400 cubic yards engineer's measure in 16½ double 10-hour shifts or roughly 930 cubic yards per shift. The records made speak very highly of the efficiency of Gaines Bros. organization.

### Iowa Notes

That a passenger automobile can be operated for 2.5 cents less a mile on a paved highway than on an ordinary gravel road is the conclusion reached by the Iowa Bureau of Business Research. Figures compiled by Carl H. Sandage of Indianola, former student at the University, show that the average passenger car traveling at the rate of thirty miles an hour necessitates an expenditure of 9.3 cents a mile on pavement. The operating cost on a gravel road is 11.8 cents a mile; on the best earth, well packed by travel, 12 cents a mile, and on ordinary dirt road, 12.6 cents a mile.

### St. Louis Items

BY A. J. KOENIG

The Missouri Pacific Railroad is making a survey of the proposed right-of-way for an extension of the Missouri Pacific from Jonesboro to Nettleton, Arkansas.

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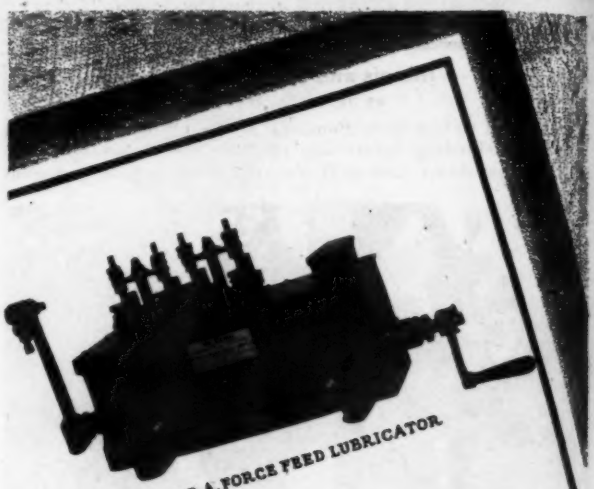

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BETTER LUBRICATION MEANS BETTER PERFORMANCE

A McCord force feed lubricator installed on your steam shovel now will insure more continuous operation. Dependable force feed lubrication prevents shutdowns and delays, it gives more hours on the job.

McCord force feed lubricators are used as standard equipment by the largest and best-known steam shovel builders, and they will be installed on any shovel at your request.

Put a McCord lubricator on now and be assured of dependable lubrication for the life of your shovel.

McCORD RADIATOR & MFG. CO.
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McCORD FORCE FEED LUBRICATORS

## SHOTS FROM THE FIRING LINE — Continued

H. Russell Shaw, airport engineer in charge of the construction work at Lambert-St. Louis flying field, has a contract for the construction of Wichita's new 640-acre airport. The Wichita field will be the first landing station to be constructed for the Transcontinenal Air Transport, Inc., the new plane-train service which will cross from the Atlantic to Pacific coasts in forty-eight hours. Mr. Shaw also holds the contract for the construction of the Tulsa municipal airport. Although the highest bidder on this work, Mr. Shaw was awarded the contract.

---

Local Union 42-D of the International Union of Steam and Operating Engineers has combined with Local No. 315 of the International Union of Operating Engineers. Maurice J. Cassidy is secretary, his address being 6145 South Grand Boulevard, St. Louis, Missouri. Patrick J. Brice, business agent for the St. Louis organization, has his office in Room 408, Fullerton Building, at the southeast corner of 7th and Pine Streets, St. Louis, Missouri.

---

J. R. Harkless, Wickliffe, Kentucky, has about 65,000 yards of railroad grading suitable for a light shovel and wagons. Anyone interested in this work should get in touch with Mr. Harkless at once.

---

The United Construction Co., 408 Lyric Building, Cincinnati, Ohio, have about 550,000 yards of grading on airport construction job and wants a large dragline outfit for this work.

---

C. G. Blythe & Son of Tama, Iowa, have just completed 90,000 yards of highway grading in Tama County. They now have their outfit idle and would like to get work.

---

W. S. Bibb, Dallas, Texas, has his outfits busy on a levee construction job in Kentucky.

---

Lefferdink Construction Co., Dwight, Illinois, has two machine outfits idle and is looking for work.

---

The List Construction Co. of Kansas City were awarded the contract for building the Kansas City Southern cut-off between Grandview and Leeds, Missouri, and have sublet work to the following contractors: List & Weatherly, concrete bridges; J. W. McMurry Construction Co., concrete bridges; Corrothers Bros., concrete bridges; McGuire Bros. and Martin Construction Co., team work. The following contractors will have shovel outfits on the work: E. L. Martin, Yale & Reagan, Allhands & Davis, and Benson & Kaiser.

---

The State Highway Commission of Missouri awarded contracts for grading and paving in their last letting to the amount of $910,000, in addition to $316,713 for bridges. Among the successful bidders were the following: M. E. Gilloz, Monett, Missouri, three sections and nine bridges, $200,000; Pioneer Construction Co., Kansas City, Missouri, four sections and six bridges, approximately $380,000; C. Gadinsky Construction Co., Kansas City, one section, $18,769, and one section $24,205; Kelly & Underwood, Grandby, Missouri, two sections, $61,000; C. P. O'Reilly Construction Co., St. Louis, one section, $35,536; G. W. Condon Co., Omaha, three sections, $55,227.

---

Contracts for 34 road and bridge projects amounting to $2,785,793 were awarded by the State Highway Department of Tennessee at the letting last month. The contracts call for about 200 miles of highway and several bridges. A record low figure was set, as much of the slab going as low as $1.74 per yard.

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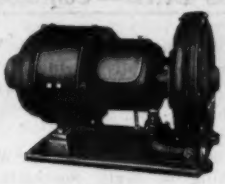
M. L. Windham is getting along nicely with his steam shovel work on the Missouri Pacific Railroad at Allenton, Missouri.

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If you will give us the number of your machine we will promptly supply a rope which we recommend for the proposed use.

**BUCYRUS-ERIE COMPANY**
SPECIALTY DEPARTMENT
South Milwaukee, Wisconsin, U. S. A.

## SHOTS FROM THE FIRING LINE — Continued

The Pioneer Construction Co. of Kansas City, Missouri, were awarded contract for a concrete and steel bridge, 377 feet, also 546 feet of earth embankment approaches on the Imboden-Black Rock Road in Arkansas.

The Illinois State Highway Division let contracts for approximately $1,000,000 at the letting in early September. Among successful bidders were: Route 142, Sction 101A, Effingham County, grading, to Cameron-Joyce & Co., Keokuk, Iowa; Route 75, Section 110-A, Stephenson County, grading, to Balmat & Sons, Lear Lake, Iowa.

### Montana Notes

The accompanying views were forwarded to us through the courtesy of B. Boulger, Chief Clerk for the Utah Construction Company. These show their Bucyrus 50-B steam shovel working on contract for the construction of the Gibson Dam, twenty-three miles northwest of Augusta, Montana. This work is being handled for the United States Bureau of

MARTIN & REILLY, St. Louis Contractors, on the sewer job pictured, dug trenches ranging in size from 24 to 40 inches in width and from 6 to 20 feet in depth.

Although a time limit was specified, that did not worry the contractors, for their Buckeye Model 201 averaged 765 lineal feet of trench daily.

*"Well-rendered service"* is how these owners express their satisfaction with this ditcher. One of its superior working features, in their judgment, is that "it is built in proportion and properly balanced. It has the weight and length to dig maximum depth without oscillation."

Whether or not it is "built in proportion" is the final test of a ditcher's worth. Measured in dollars and cents, this factor represents the difference between profit and loss.

Every part of every Buckeye is constructed to withstand shocks and strains far greater than it is likely to encounter in actual service. What is equally important, all parts are of the correct relative strength.

Thousands of these excavators are daily giving universal satisfaction in all kinds of trenching — sewer, water, pipe-line, drainage, reclamation, and irrigation. Some are giants in size, *all are giants in working ability.*

*The*
**Buckeye Traction Ditcher Company — Findlay, Ohio**

*There's a Buckeye Sales and Service Office Near You*

*for over thirty years* **Buckeye**

**Where weight counts most**

Time and again you see WILLIAMS Buckets dig in and stand up in work that stops other buckets, because—

The WILLIAMS is more ruggedly constructed throughout — with the weight not simply hung on, but built right into the bucket where it adds Strength and Durability as well as Digging Power.

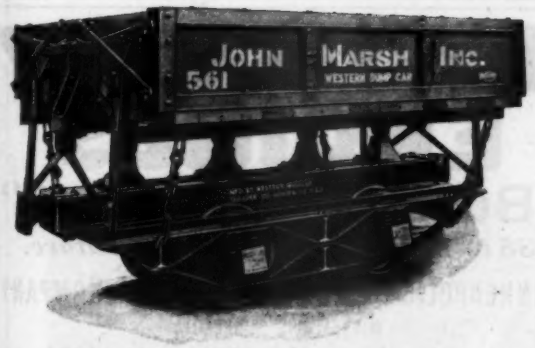
Write for our Bucket Book.

G. H. WILLIAMS COMPANY
603 Hayburger Lane, Erie, Pa.
*Branch Offices:*
New York Pittsburgh Cleveland Chicago

**WILLIAMS**
FAST-DIGGING BUCKETS

A typical loading scene. Notice the heaping loads. These Western 4-yard cars are made to carry three 1¾-yard dipperfuls each. H. E. Culbertson Company's work at Crestline, Ohio.

# IF—*There Are No Ifs With Westerns*




The sturdy Western 4-yard Dump Car.

THEY will get out the work. Rugged strength; fast, clean dumping; ease of operation; ability to ride rough track; few repairs—these are some of the features of the Western 4-yard and 5-yard cars that will help you when it is necessary to bear down to get out the work.

Railroad contractors, whose profits depend on their ability to do the work cheaper than their competitors and as soon as the railroads want it, use Western Dump Cars.

Specifications and prices on request.

**Western Wheeled Scraper Co.**

**Aurora · Illinois**

# WESTERN

Western

## DUMP CARS AND GRADING EQUIPMENT

In writing to Western Wheeled Scraper Co. please use post card bound in the center of this number.

## SHOTS FROM THE FIRING LINE — Continued

Reclamation, and the shovel after moving 40,000 cubic yards of earth and rock in excavation for the foundations, was moved to the gravel pit where it removed 30,000 cubic yards of stripping and is digging 170,000 cubic yards of gravel for the concrete work on the dam construction. It is loading as high as 30 standard cars per shift from the gravel pit in which boulders are encountered up to 1½ feet in diameter. A. E. Paddock is superintendent of construction for the Utah Construction Company, whose head office is in Ogden, Utah. Other equipment on the job includes a Marion air shovel, an Osgood 1¼-yard shovel, Davenport and Porter locomotives, Sullivan compressors, Caterpillar tractors, and Coleman trucks.

### Canada

*Winnipeg and Vicinity*

The railway from the Pas to the Flin Flon, under construction since last December, is expected to be ready for freight traffic by December 1st of this year. The power development in connection with the project is situated 60 or 70 miles north of the mine, and it is expected to freight all supplies and materials for this development in from the mine during the coming winter. Construction of the mill and smelter is also expected to commence with the completion of the railway. The Hudson Bay Mining and Smelting Company, Limited, plan on both open pit and underground operation.

### Pacific Coast Notes

BY T. L. CULBERTSON

Contract was awarded by the Southern Pacific Company to the Utah Construction Company, Phelan Building, San Francisco, for 12½ miles of railroad running from Klamath Falls, Oregon, southeast, involving 150,000 yards of excavation. This is part of the Klamath Falls to Alturas project.

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Contract was awarded September 4th by the City of Long Beach to the Hauser Construction Company, Security Building, Long Beach, California, who bid $959,906 for construction of pleasure pier, auditorium fill, etc., on the ocean front at Long Beach. The pleasure pier is to be of stone rubble mound construction, involving 296,000 tons of revetment stone. This is to be flanked with a wooden pier 3800 feet long by 36 feet wide. Within the enclosure of the pier, an 8-acre site for a civic auditorium is to be reclaimed by 200,000 cubic yards of dredged material within a creosoted wooden bulkhead 1800 feet long. Ross Construction Company of Los Angeles, $989,905, was next lowest bidder.

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Bids will be received up to 10:00 a. m. November 14, by the Los Angeles County Flood Control District, Hall of Records, Los Angeles, for the construction of the San Gabriel Dam. Work involves in the main: 1,200,000 cubic yards of excavation; 3,800,000 cubic yards concrete; 2,400 tons of metal work. Bids will be received on three propositions (A) contractor supplies aggregate; (B) District supplies one-half the aggregate; and (C) District supplies all aggregate. Certified check for $200,000 or surety bond for $250,000 must accompany bid. Plans from E. C. Eaton, Chief Engineer, Los Angeles County Flood Control District, 202 North Broadway, Los Angeles, within a week by payment of $50.

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Plans are being made by City Engineer W. L. Popp for the construction of the second unit of the outfall sewer, which will be carried out over the marsh land to a junction of the Coyote River and Gray Goose Slough. The estimated cost is $100,000.

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Negotiations between the Finkbine-Guild Lumber Company and the Great Southern Lumber Company have resulted in the organization of the Southern Redwood Company which has taken over all of the properties of the Finkbine-Guild Company, including their redwood operation at Rockport, California. Both the Finkbine-Guild and Great Southern Lumber Company interests will be large stockholders in the new company.


**An all-around contractor's bucket**

A HAYWARD Orange Peel Bucket is the ally of the contractor who gets jobs done on schedule time. It speeds up operations in sewer work, in gravel banks, removing overburden, dredging, excavating and rehandling material generally.

Let us send you bulletin No. 655, describing Hayward Orange Peel Buckets and their applications.

THE HAYWARD CO.
54 Church Street
New York, N. Y.

**Hayward Buckets**

**TWIN CITY ENGINES**

**"Built to Do the Work"**

*35 to 140 h. p. Write for Literature.*

**MINNEAPOLIS STEEL AND MACHINERY COMPANY**
MINNEAPOLIS, MINNESOTA
*Heavy Duty Engine Manufacturers since 1903*

**Meeting Place of Capital and Labor**

*The* **KOENIG LABOR AGENCIES**
*Established 1875*

ST. LOUIS
612 Walnut Street
Main 2766 and 2767

KANSAS CITY
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**Help of All Kinds Furnished Free**

# TRADE NOTES

## Topping Company Moves to Cleveland, Ohio

*The Chas. T. Topping Machinery Company*, manufacturers of excavating machinery, announce the removal of their offices from the U. B. Building, Dayton, Ohio, to *4403 St. Clair Avenue, Cleveland, Ohio.*

Arrangements have been completed, providing them with enlarged manufacturing facilities for increasing production of their Topping Pony-Ditcher, a traction-driven trench excavating machine. One of the unique features of this machine is that it employs a Fordson or McCormick-Deering tractor for its power plant.

It is expected they will announce other types of excavating machinery, in addition to their present line, as soon as present development work is completed. Chas T. Topping, formerly of Pittsburgh, Pennsylvania, and Dayton, Ohio, is president.

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*The Ames Shovel and Tool Company* have moved their sales and administrative offices from Boston to North Easton, Massachusetts. The principal reason for this change is to secure a closer contact between the Sales Department and the Manufacturing Department, with a view to giving better service to their customers.

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*The Westinghouse Electric & Manufacturing Company* announce the appointment of Bernard Lester as Assistant Industrial Sales Manager in charge of the Company's business relationships with architects, builders and building contractors, and manufacturers of machinery and motor-driven appliances. Mr. Lester will make his headquarters at *150 Broadway, New York City.*


**Black Gum Rollers**

Standard dragline sound heart black gum rollers recommended by all contractors as superior to maple, at one-third the cost. Send us a trial order for a set, and be convinced. Used exclusively in all southern levee building on soft soil, which is a hard test on rollers. They have proven superior to all other materials.

**Doherty-Walsh Roller Co.**
**Baton Rouge, Louisiana**

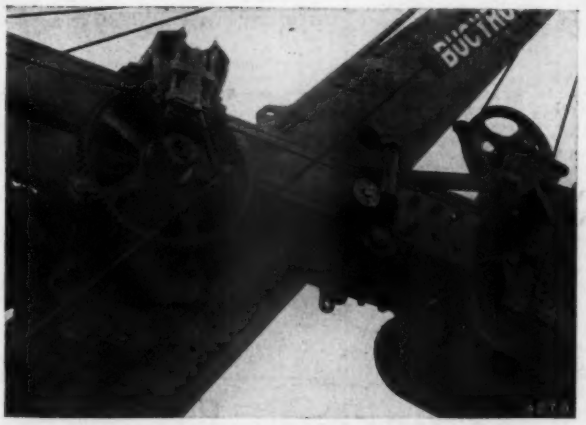
GASOLINE PLYMOUTH LOCOMOTIVES DIESEL

*The*
**PLYMOUTH**
**LINE OF GASOLINE AND DIESEL**
**LOCOMOTIVES**
**IS COMPLETE FROM**
**2 TON TO 50 TON SIZES**

TIME IS THE TEST. IT'S THE SAVING IN OPERATION COST THAT COUNTS.

PLYMOUTH LOCOMOTIVE WORKS
*The Fate-Root-Heath Company*
277 Riggs Avenue PLYMOUTH, OHIO

**NEW 50-B DIPPER TRIP**
**For Steam or Air**



A power Dipper Trip will enable your crew to work to better advantage and to increase the yardage.

We have other designs for Steam and Electric Shovels.

Write for information on a suitable Dipper Trip for your machines.

**BUCYRUS-ERIE COMPANY**
SPECIALTY DEPARTMENT
SOUTH MILWAUKEE, WISCONSIN, U. S. A.

## BOOK REVIEWS

We shall be glad to review such books and catalogs as are sent us

*George D. Whitcomb Company of Rochelle, Illinois,* have recently issued Bulletin No. 2822 which supersedes their older Bulletin No. 2722. This bulletin describes locomotives of 3½, 4½, and 5 tons, all powered by the Continental Red Seal 4-cylinder engine, such as is in general use in heavy trucks. These locomotives are built in 18 to 42-inch gauges.

The bulletin describes and illustrates in a very complete manner the construction of these locomotives, also giving speeds and drawbar pulls, together with a table of hauling capacities in connection with a table of frictional resistance.

Copies of this bulletin can be obtained by addressing the George D. Whitcomb Company at the above address.

*Schramm, Incorporated, of West Chester, Pennsylvania,* have recently issued a new catalog entitled *"Schramm Air Compressors 1928-29."* This catalog gives, of course, complete descriptions of the different air tools, such as rotating drills, riveting hammers, etc., sold by this company. Articles in this catalog also describe the various work to which Schramm Pneumatic tools and equipment is adapted. Copies may be obtained by addressing Schramm, Incorporated.

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The *S. G. Taylor Chain Company, Hammond, Indiana,* have issued a revised blue print No. B, containing useful data relative to safe working loads on their TAYLOR-MESABA Double Sling Chains, when used at various angles. This blue print also contains some very good suggestions relative to the proper uses of chain. The size is 15-inch by 21-inch; therefore, can be conveniently posted around the shop or on safety bulletin boards. Prints will be sent free upon request of any executive.

# FOR SALE

Space under this heading is available at the following rates:

1 to 3 inches.....$4.30 an inch
4 to 7 inches..... 4.10 an inch
8 to 14 inches..... 4.00 an inch

An inch is measured vertically on one column — three columns to a page. Any space may be used measured by the even inch in height and by one, two or three columns in width.

The price per inch is based on total space used — multiply ad space by number of continuous insertions.

## FOR SALE

**OVERSTOCK OF MOTOR GENERATOR SETS**

The following equipment has not been used and is available for sale only because it does not suit our machines as now being built:

1 MG set, 90 h.p., 440 volts, KT-553-Y, 3-phase, 25-cycle, direct connected to 60 KW, RC-32B, 250 volts, D. C., complete with rheostat CR-8000, speed probably 1500 r.p.m.

3 MG sets, 75 H. P., 440 volts, KT-347, 6-pole, 3-phase, 60-cycle, 1150 R. P. M., direct connected to 50 KW, RC-35, 250 volt, D. C., compound wound, complete with compensator MI, CR-1030, mill-type, hand-operated and field rheostat CR-8000.

2 MG sets, 75 H. P., 2200 volts, KT-347, 6-pole, 3-phase, 60-cycle, 1150 R. P. M., direct connected, 50 KW, RC-35, 250 volts, D. C., compound wound, complete with compensator CR-1034, M-13, hand operated.

1 Motor, 90 H. P., 550 volts, KT-553-Y, 2-pole, 3-phase, 25-cycle, 1500 R. P. M. for changing 440-volt MG set to 550 volt.

**BUCYRUS-ERIE COMPANY**
**Sales Department**
**South Milwaukee, Wisconsin**

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**BUCYRUS 225.** Steam, 6-yard manganese bucket, new sticks and boiler. Extra parts. Can be seen in operation. Located in Ohio. No. 3628.

**MARION 36.** Steam, 2-yard caterpillar, 28-foot boom, 18-foot dipper handle. Good condition. Extra parts. Located in Ohio.

Both shovels can be bought at bargain. Address Box 1006, % The Excavating Engineer, South Milwaukee, Wis.

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**MARION 37 STEAM SHOVEL,** caterpillar mounted, 28-foot 6-inch boom, 19-foot handle, 1¾-yard manganese front dipper, located near Pittsburg, Kansas. Machine used very little and in exceedingly good shape. Priced to sell.

**TYPE 3-A THEW,** located near Pittsburg, Kansas. 31-foot boom, 24-foot handle, 1-cubic-yard dipper, caterpillar mounted. Shop number about 2150. Shovel used very little and in very good condition. Equipped with new boiler. For immediate delivery. Address Box 805, The Excavating Engineer, South Milwaukee, Wisconsin.

## FACTORY REBUILT
## BUCYRUS-ERIE Shovels

**High Lift 'B' ERIE Steam Shovel** with power operated boom hoist and brand new caterpillar-type mounting.

**High Lift Gas + Air ERIE Shovel** on caterpillar-type mounting.

**Type A Erie Steam Shovel,** ⅝-yard dipper, 16-foot boom and 13-foot dipper handle. Caterpillar mounting.

***Completely rebuilt. Carry same guarantee as new machines. Immediate shipment.***

Write or wire for prices and full information.

**BUCYRUS-ERIE COMPANY**
**Erie, Pa.**

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**LORAIN "75,"** about 2 years old, equipped with 1⅛-yard shovel combination and 45-foot boom, 1-yard dragline attachment. Ready for immediate delivery. Located near Omaha. Address Box 802, The Excavating Engineer, South Milwaukee, Wis.

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**MARION 36 STEAM SHOVEL,** shop number about 4750. Equipped with 28-foot handle, 1¼-yard manganese bucket, caterpillar mounted. Machine in excellent condition, working every day. Has handled small yardage. Located Central Kentucky. Address Box 702, Excavating Engineer, South Milwaukee, Wisconsin.

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**MODEL 92 MARION SHOVEL,** shop number about 3800. Equipped with 5-cubic-yard dipper. Recently overhauled. Excellent condition. Ready for prompt delivery. Location Kansas City. Address Box 602, Excavating Engineer, South Milwaukee, Wisconsin.

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**MARION 26 STEAM SHOVEL,** shop number about 2940. Equipped with 22-foot boom, 21-foot handle, mounted on 5-foot traction wheels. Can be inspected at Pittsburgh, Pennsylvania. Machine in excellent condition, ready for immediate delivery. Address Box 600, Excavating Engineer, South Milwaukee, Wisconsin.

## DRAGLINES

**Will buy**
**Steam, Gasoline, Diesel or Electric.**
**What have you to offer?**
**ZELNICKER in St. Louis**

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**TYPE A ERIE STEAM SHOVEL,** approximate shop number 1540, mounted on traction wheel truck, equipped with 16-foot boom, 12-foot 6-inch dipper handle, ⅝-cubic-yard dipper. Boiler and machinery overhauled this spring. A real bargain. Located in Eastern Wisconsin. Address Box 506, Excavating Engineer, South Milwaukee, Wisconsin.

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**TYPE "O" THEW GAS SHOVEL,** caterpillar mounted, ¾-cubic-yard dipper, 19-foot 6-inch boom, 18-foot 6-inch dipper stick, Waukesha motor; about three years old; in good condition, just overhauled; located near Milwaukee. Shop number about 2500. Priced for quick sale. Address Box 502, Excavating Engineer, South Milwaukee, Wisconsin.

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**ONE 40-FOOT BOX-GIRDER BOOM,** complete with drag drums and fittings, and **ONE-YARD CLASS 8 PAGE BUCKET.** Above equipment for Ga-2 Bucyrus-Erie. Used on one 30-day job. Immediate shipment. Address **Wm. H. Ziegler Co., Inc., 619 Washington Ave., So., Minneapolis, Minn.**

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**ORTON STEAM CRANE** mounted on caterpillar trucks, 50-foot boom, oil burner, in first-class condition. Address Box 800, The Excavating Engineer, South Milwaukee, Wisconsin.

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**ONE 37 MARION ELECTRIC SHOVEL** on caterpillars, in splendid condition and a rare bargain, and must be sold at once. Address,

**The Pittsburg Boiler & Machine Co.**
**Pittsburg, Kansas**

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**ERIE "B" COMBINATION SHOVEL AND CRANE,** traction wheel mounted, ⅝-cubic-yard clam bucket, 40-foot boom. Shop number about 1050. Good condition, ready to work. Priced right. Located in Southern Wisconsin. Address Box 504, Excavating Engineer, South Milwaukee, Wisconsin.

## DREDGES

**HYDRAULIC, DIPPER AND CLAMSHELL**

**Pumps, Cutters and Hoists, Sand and Gravel Pumping Plants.**

**JEAN M. ALLEN & CO.**
**Contracting and Consulting Engineers**
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